Potion from a TradFi perspective

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Note

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Contents

Potion ecosystem

Derivatives such as forwards, futures, options and swaps are well known in the TradFi domain. Each of them have unique contract specifications to distinguish them for a particular business objective. In Potion ecosystem, there are liquid tokens and Potions.

A **liquid token** can be illustrated from a derivative perspective. Its characteristics meets the objective to make money if crypto markets get volatile. And crypto markets have often periods of high volatility.

Potions are smart contracts on the blockchain that execute the mechanics between liquid tokens and their underlying assets to achieve advantages for its users in volatile market periods. In decentralized finance (DeFi), this type of investment strategy is called **volatility farming**.

Overall, a typical contract specification of a liquid token in the TradFi universe might be outlined as follow:

- **Underlying**.
  For instance, the Potion ecosystem provides the liquid token called **liquid Ether (lETH)**. The underlying of the lETH is the famous token Ether (ETH). That's why liquid tokens are often prefixed by the small letter l followed by the abbreviation of the underlying asset.

- **Backing ratio**.
  In simple terms, it is a number to express how many of the underlying asset can be delivered from the Potion ecosystem for one liquid token. Let's consider the liquid token lETH and its underlying ETH for example. If your wallet contains 10 lETH and the backing ratio is 1.0358, then your wallet is eligible to redeem 10.358 ETH for 10 lETH,

$$10 \text{ lETH} \times 1.0358 = 10.358 \text{ ETH}.$$

  A comprehensive introduction about this number is covered in the section *Magic of backing ratio*.

- **No expiration date**.
  In contrast to futures and options, a liquid token remains valid in your wallet until redeemed for the underlying asset on the Potion ecosystem.

- **Right to exercise at any time**.
  In contrast to European-style options, a liquid token can be redeemed at any time for the underlying asset. It's your right to decide about the delivery time of the underlying asset from the Potion custody backend.

Each Potion has its own fee structure, parameterized by its issuer. This could be the inventor of the Potion ecosystem, that's Yield Enhancement Labs (YEL), or a third-party project that offers own services and digital assets (tokens) for Web3[1]. That's why some Potions may denote an optional partner fee on YEL's website.

The next three sections are important to understand the revenue model of each Potion and what the fee matters for YEL's tokenomics[2] and its users.

Magic of backing ratio

In this section, we introduce a simplified Potion model by considering only the **burn fees**. This makes the entrance to the subject volatility farming more accessible at the beginning. We will consider the whole fee picture in the next section *Fee structure on Potion*.

Let's get started by unfolding the magic of backing ratio. Assuming that Ether tokens (ETH) are wrapped from a blockchain wallet to a particular Potion smart contract at the first time, using YEL's wrap market[3]. This means that there is no ETH on this smart contract yet. Yupiter, a smart dog who discovered this new DeFi service recently, has 10 ETH and wraps them to this Potion, as shown in Table 1.

Yupiter		Potion	Burned
0 ETH	$\rightarrow$	10 ETH	0 ETH
0 lETH		0 lETH	0 lETH

Table 1: Yupiter wraps ETH

Then, the smart contract mints[4] 10 liquid Ether (lETH), see Table 2.

Yupiter	Potion	Burned
0 ETH	10 ETH	0 ETH
0 lETH	10 lETH	0 lETH

Table 2: Potion mints lETH

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[1]Is the third evolution of the World Wide Web.
[2]Is the token economic model of a Web3 project.
[3]Is a market place to (un)wrap liquid tokens, run by YEL.
[4]Minting tokens mean creating new tokens on a blockchain.

From a total supply perspective, we can say that there is only 10 lETH in circulation at the moment. Hence, 10 ETH is equal to 10 lETH and the backing ratio is one to one (1:1). Thus, both tokens must have the same dollar value. Next, a burn fee is charged for Yupiter's wrap action. Let's assume that the burn fee for wrapping is 0.75% on this Potion. As a result, Yupiter's wallet receives only 9.925 lETH. The other 0.075 lETH are irreversible removed from circulation by the burn mechanism. Both transfers are reproduced in Table 3.

Yupiter		Potion		Burned	
0	ETH	10	ETH	0	ETH
9.925 lETH	$\leftarrow$	0 lETH	$\rightarrow$	0.075 lETH	

Table 3: lETH to Yupiter and lETH burned

Hence, the total supply of lETH decreases from 10 to 9.925,

$$10 \text{ lETH} - (10 \text{ lETH} \times 0.75\%) = 9.925 \text{ lETH},$$

and the backing ratio increases from one to 1.00756 (to 5 d.p.),

$$\frac{10 \text{ ETH}}{9.925 \text{ lETH}} = 1.00756 \text{ (to 5 d.p.)}.$$

Thus, Yupiter's wallet is eligible to redeem 10 ETH for 9.925 lETH,

$$9.925 \text{ lETH} \times 1.00756... = 9.925 \text{ lETH} \times \frac{10 \text{ ETH}}{9.925 \text{ lETH}}$$

$$= \cancel{9.925 \text{ lETH}} \times \frac{10 \text{ ETH}}{\cancel{9.925 \text{ lETH}}}$$

$$= 10 \text{ ETH}.$$

To understand the whole lifecycle of a liquid token in this simplified Potion model, we let Yupiter unwrap all its lETH on the same Potion, using again YEL's wrap market. This means that the smart contract receives 9.925 lETH from Yupiter's wallet, as shown in Table 4.

Yupiter		Potion		Burned	
0	ETH	10	ETH	0	ETH
0 lETH	$\rightarrow$	9.925 lETH		0.075 lETH	

Table 4: Yupiter unwraps lETH

Next, a burn fee is charged for Yupiter's unwrap action. Let's assume that the burn fee for unwrapping is 0.45% on this Potion. This means that 0.0446625 lETH are irreversible removed from circulation by the burn mechanism. Hence, the Potion ecosystem burned 0.1196625 lETH in total so far, as illustrated in Table 5.

Yupiter	Potion		Burned	
0 ETH	10 ETH		0	ETH
0 lETH	9.8803375 lETH	$\rightarrow$	0.1196625	lETH

Table 5: Potion burns more lETH

Thus, the total supply of lETH decreases from 9.925 to 9.8803375,

$$9.925 \text{ lETH} - (9.925 \text{ lETH} \times 0.45\%) = 9.8803375 \text{ lETH},$$

and the backing ratio increases from 1.00756 to 1.01211 (to 5 d.p.),

$$\frac{10 \text{ ETH}}{9.8803375 \text{ lETH}} = 1.01211 \text{ (to 5 d.p.)}.$$

After deducting all burn fees, Yupiter's wallet is eligible to redeem 10 ETH for 9.8803375 lETH,

$$9.8803375 \text{ lETH} \times 1.01211... = 9.8803375 \text{ lETH} \times \frac{10 \text{ ETH}}{9.8803375 \text{ lETH}}$$

$$= \cancel{9.8803375 \text{ lETH}} \times \frac{10 \text{ ETH}}{\cancel{9.8803375 \text{ lETH}}}$$

$$= 10 \text{ ETH}.$$

Finally, the smart contract burns the remaining lETH and Yupiter's wallet receives 10 ETH. This means that the circulation of lETH is zero and the lifecycle of lETH is closed. And there is no ETH left on the smart contract because Yupiter's wallet received all the ETH by redeeming its lETH. Both transfers are reproduced in Table 6

Yupiter		Potion		Burned
10 ETH	$\leftarrow$	0 ETH		0 ETH
0 lETH		0 lETH	$\rightarrow$	10 lETH

Table 6: ETH to Yupiter and remaining lETH burned

In this simplified Potion model, Yupiter can redeem the exact same amount of ETH that were wrapped at the beginning. This counts also if Yupiter's friends use the same Potion. Each friend is eligible to redeem the same amount of the underlying asset that were wrapped at the beginning. Of course, there are more liquid tokens burned with friends but the value of the backing ratio ensures that the redemption is fair distributed across all wallets. The interaction with Potion only costs gas fee[5]. To understand how the value of Yupiter's lETH increases over time, we need to extend this model by adding an advanced fee structure to the Potion ecosystem and considering the arbitrageurs. The next section will cover the fee subject.

Fee structure on Potion

The simplified Potion model from the previous section includes only the burn fees at wrapping and unwrapping stages. In reality, each Potion can have different fee structure to incentive various market participants such as liquidity providers (LP)[6], Web3 builders who wants to enhance own tokens on the Potion ecosystems, etc.

To understand the advanced fee structure in the Potion ecosystem, we continue our story from the previous section and append an **accumulation fee** on top of the (un)wrap action. In particular, we double the wrap fee from 0.75% to 1.5% and the unwrap fee from 0.45% to 0.9%, see Table 7.

	Total		Potion		Burn
Wrap	1.5%	=	0.75%	+	0.75%
Unwrap	0.9%	=	0.45%	+	0.45%

Table 7: Potion fee structure for lETH

If Yupiter wraps 10 ETH with this new wrap fee on YEL's wrap market, then 0.075 lETH is burned and the same quantity is accumulated on the Potion's smart contract. Hence, Yupiter's wallet received only 9.85 lETH from the smart contract,

$$10 \text{ lETH} - (10 \text{ lETH} \times 1.5\%) = 9.85 \text{ lETH}.$$

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[5]The amount of the gas fee depends on the blockchain.

[6]Similar to market makers, LP ensure liquidity on market places.

Table 8 illustrates this wrap action.

Yupiter			Potion			Burned	
0	ETH	$\rightarrow$	10	ETH		0	ETH
9.85	lETH	$\leftarrow$	0.075	lETH	$\rightarrow$	0.075	lETH

Table 8: Wrap action

Furthermore, if Yupiter unwraps all its lETH with this new unwrap fee on YEL's wrap market, then 0.044325 lETH is burned and the same quantity is accumulated on the Potion's smart contract. In total, 0.119325 lETH is burned and 0.119325 lETH is accumulated, as shown in Table 9.

Yupiter			Potion			Burned	
0	ETH		10	ETH		0	ETH
9.76135	lETH	$\rightarrow$	0.119325	lETH	$\rightarrow$	0.119325	lETH

Table 9: Subtotal

Thus, after fees, Yupiter's wallet is eligible to redeem only 9.76135 lETH,

$$9.85 \text{ lETH} - (9.85 \text{ lETH} \times 0.9\%) = 9.76135 \text{ lETH}.$$

This is because after each wrap or unwrap action, Yupiter leaves a bit of the liquid tokens in terms of accumulation fees on this Potion. This means that the accumulated fees do not reduce the total supply of the liquid token. In total, there are still 9.880675 lETH in circulation,

$$9.76135 \text{ lETH} + 0.119325 \text{ lETH} = 9.880675 \text{ lETH}.$$

That's why the backing ratio is 1.01208 (to 5 d.p.),

$$\frac{10 \text{ ETH}}{9.880675 \text{ lETH}} = 1.01208 \text{ (to 5 d.p.)}.$$

After all, how many ETH does Yupiter receive for its lETH? We know that Yupiter's redeem power is 9.76135 lETH and for that reason its wallet is only eligible to redeem 9.879234 ETH (to 6 d.p.) and not the full 10 ETH,

$$9.76135 \text{ lETH} \times 1.01208... = 9.76135 \text{ lETH} \times \frac{10 \text{ ETH}}{9.880675 \text{ lETH}}$$

$$= 9.879234 \text{ ETH (to 6 d.p.)}.$$

This means that Potion allocates 9.879234 ETH to Yupiter's wallet and removes irreversibly its 9.76135 lETH from circulation by the burn mechanism. In total, 9.880675 lETH were burned after the wrap and unwrap action. Table 10 shows the final result on the blockchain.

Yupiter			Potion		Burned	
9.879234	ETH	$\leftarrow$	0.120766 ETH		0	ETH
0	lETH	$\rightarrow$	0.119325 lETH	$\rightarrow$	9.880675	lETH

Table 10: Final result

If Yupiter had decided to hold its liquid tokens instead of unwrapping them, then its break even were achieved as soon as the backing ratio were increased by 1.2% (to 1 d.p.) from 1.01208 to 1.02445 (to 5 d.p.),

$$9.76135 \text{ lETH} \times 1.02445... = 10 \text{ ETH}.$$

What happen to the accumulated fees and the remaining ETH? Each Potion has a threshold for the accumulated fees, shown on YEL's website. If this threshold is achieved, then the accumulated fees are used to generate buy pressure to the YEL[7] token. For instance, if the accumulated fees are in lETH, then they are unwrapped to ETH on YEL's wrap market and then used to buyback YEL tokens from the decentralized exchange (DEX). This means that the accumulated fees are burned and the equivalent value in ETH is withdrawn from the Potion's smart contract to buy YEL tokens. These YEL tokens are then available on YEL's website for claiming by market participants in terms of incentive, as mentioned at the beginning of this section. Hence, holders of the YEL token benefit from this buyback mechanism. In particular, holders of a liquid token benefit from the additional backing ratio. The next section covers the arbitrage subject.

Volatility farming

We know that markets have different periods of volatility and we know that global markets such as CEX, DEX, p2p etc. may have price mismatches. These market imbalances are equalized by arbitrageurs if there are opportunities to make instant profit.

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[7]Is the utility token issued by Yield Enhancement Labs (YEL).

For instance, if there is an imbalance between two liquidity tokens, e.g. lETH and lBLAST due to market fluctuations on their underlyings ETH and BLAST, then an arbitrageur may enter the YEL's wrap market and wrap its ETH to lETH, then wrap this lETH to lBLAST and then unwrap this lBLAST to ETH,

$$ETH \rightarrow lETH \rightarrow lBLAST \rightarrow ETH.$$

If this arbitrage chain is positive minus all the (un)wrap fees from the Potion ecosystem, then the arbitrageur makes money. At the same time, the arbitrageur inflows new assets to Potion and leaves some of its profit behind.

If we consider the story from the previous section, then 50% of the (un)wrap fee is burned and the other 50% is used to buyback YEL tokens. We know that each (un)wrap action increases the backing ratio and the YEL token gets stronger compared to other assets. That's why Yupiter's redeem power for lETH increases on volatile market periods.

In order that no party is put at a disadvantage, everyone has to pay the same (un)wrap fee. The only difference is that holders of liquid tokens make money as soon as the break even is achieved whereas arbitrageurs make money instantly if the transactions for the arbitrage business is profitable. On the other hand, arbitrageurs have execution risks.

In summary, arbitrageurs are triggered by market fluctuations and leave more ETH in Potion, burn more lETH and increase buying pressure to the YEL token. This arbitrage cycle is the engine of the Potion ecosystem and offers new opportunities in the DeFi space.

Conclusion

At the time of writing, the ecosystem provides three Potions for ETH, BLAST and YEL tokens. All three have the same fee structure. A wrap fee of 1.5% and an unwrap fee of 0.9%. For both fees, 50% of the liquid token is burned and the other 50% is used to buyback YEL token. Each liquid token can be (un)wrapped on YEL's wrap market. The Potion ecosystem can be implemented smoothly at the top of a dollar-cost averaging (DCA) strategy or any other investment approach to optimize the overall portfolio yield. There is no magic behind volatility farming. Only simple market mechanics driven by arbitrageurs who inflow value in your Potion.