

*-Note: This report is written in a slightly different format than our usual reports; I thought it'd be easier to read (and write) this way. I did not include price charts or technical analysis – the reason will make sense later on.*

*-All stats are taken from a snapshot of Olympus' website and their Dune Analytics page on the night of October 28<sup>th</sup>, 2021.*

***-This is one of the most interesting projects I've ever seen in DeFi; I think the model will continue to see more adoption and is therefore important to understand.***

Snapshot	
<b>Ticker</b>	OHM
<b>Current Price:</b>	~\$1200
<b>Market Cap:</b>	~\$4 billion
<b>Circulating Supply:</b>	Changing daily
<b>Token Type:</b>	ERC-20
<b>Sector:</b>	DeFi

## Executive Summary

When a friend first told me about Olympus DAO and its OHM token a month or so ago, I wrote it off as a ponzi. After about 2 minutes of research, I saw the crazy APY for OHM stakers (now around 8,000%) and immediately left the website. The price would soon collapse as prices fell and holders rushed to sell, and that would be the end of it...or so I thought.

I was wrong. Holders did not rush for the exit; in the month since I first heard about \$OHM, the price has gone from around \$600 to \$1115 while maintaining a staking APY of over 8,000%. Olympus has also partnered with over 10 (not insignificant) protocols through their Olympus Pro service and has inspired a series of forks (which essentially means copying much or all of their smart contract code to make a new project, often on a different blockchain), some of which have done very well themselves. However, even after seeing the massive growth, I still had no idea if I should look at investing in

it or if it was a house of cards waiting to collapse, so I decided to find out myself. But before we run that test, we need to talk about what Olympus actually does.

## Olympus: Owning Your Liquidity

Olympus seeks to create a decentralized reserve currency (OHM) backed by a basket of assets, such as stablecoins and liquidity provider tokens. Olympus helps protocols, including itself, own their own liquidity rather than rent it. Basically, they began by stockpiling liquidity (LP tokens) and stablecoins for their own treasury to back their token (OHM), and now they help other protocols do the same.

What is the difference between “renting” and “owning” liquidity? Well, traditionally, a DeFi project that needs liquidity to grow will have to create some sort of incentive for users to come provide liquidity on their platform. The protocol will run an incentive program, where the protocol's token is distributed to those who provide liquidity during a certain time period.

The issue here is that this is rarely *sticky* liquidity; most of the time, big money players come in, farm the protocol's token by providing a lot of liquidity for a short amount of time, and then sell their reward tokens and leave, hurting the protocol token's price and leaving the protocol not much better off than it was before. This temporary surge in liquidity that then leaves after the incentives run out is what has been dubbed **rented** liquidity.

Olympus flips the story by selling bonds: **distributing OHM in exchange for other tokens.**

Olympus does this for themselves, and they also help other protocols do it through their Olympus Pro program. From a user's perspective, the process looks like this:

**1.** Obtain a token that Olympus will sell you a bond for. For this example, we'll say you have some OHM and some DAI. You use those to provide liquidity to the OHM/DAI liquidity pool

on Sushiswap to obtain OHM/DAI LP tokens, which is one of the tokens Olympus is accepting for bonds at the moment.

2. You go to Olympus and sell them the LP tokens to create a bond, which gives you a claim on a certain amount of \$OHM.

3. Your claimed \$OHM vests linearly, meaning that you will receive it at a linear pace. After a fixed period (currently 5 days), you will have received all of it.

The reason you would *want* to sell your LP tokens to Olympus is that you can obtain discounted \$OHM. The market determines the discount: when less outstanding bonds exist Olympus offers you OHM at a higher discount, and when more outstanding bonds exist Olympus offers less of a discount (or sometimes even a premium if too many bonds exist at the moment). Currently, you can sell Olympus OHM/DAI LP tokens for OHM that is worth 4.03% more than your LP token. Obviously, there is a 5 day long delay on that gain and the price of \$OHM may move during that time, but that is a risk that bonders take.

Buying LP tokens helps increase treasury revenue as the LP tokens earn trading fees, and they allow the protocol to own their own liquidity since the Olympus treasury cannot sell these LP tokens. **Through this bond-selling method, Olympus has accumulated over 99% of the liquidity for its OHM/DAI pool.** This means that traders will always have tremendous liquidity while trading that pair. Olympus also sells bonds for some non-LP tokens, such as regular DAI or ETH, to build their treasury further.

## Backed OHM

I should describe the backing mechanism underlying the \$OHM token. Each OHM is backed 1:1 by the treasury; if OHM ever dropped below \$1, the protocol would buy back OHM using the treasury and burn it. While OHM trades above \$1, the protocol mints and sells

new OHM using the revenue earned from bond sales. The best part here is that, unlike a government-ran currency where you have to trust them with “minting” power, you do not have to place your trust in anyone in Olympus; all you have to trust is the publicly-visible, provable, immutable code in their smart contracts (see Figure 1, I’m just showing it’s viewable). This 1:1 backing will be discussed more later.

```
/**
 *notice allow approved address to burn OHM for reserves
 *param _amount uint
 *param _token address
 */
function withdraw( uint _amount, address _token ) external {
    require( isReserveToken[ _token ], "Not accepted" ); // Only reserves can be used for redemptions
    require( isReserveSpender[ msg.sender ] == true, "Not approved" );

    uint value = valueOf( _token, _amount );
    IOHMER20( OHM ).burnFrom( msg.sender, value );

    totalReserves = totalReserves.sub( value );
    emit ReservesUpdated( totalReserves );

    IERC20( _token ).safeTransfer( msg.sender, _amount );

    emit Withdrawal( _token, _amount, value );
}
```

Figure 1: The withdraw function allows users to burn OHM for stablecoins<sup>1</sup>

## Staking

Olympus’ method of building a reserve currency and helping protocols own their own liquidity through selling bonds should make more sense now, but a large reason that many users buy has not been discussed yet: staking rewards.

Since Olympus mints new OHM as the treasury grows, it wouldn’t make sense to buy OHM if your share of the total OHM tokens would be diluted as more OHM is minted. To solve this, Olympus rewards almost all newly minted OHM to stakers (a small amount goes to the treasury). The current APY is over 8,000%, and 92% of all OHM is staked<sup>2</sup>.

As Olympus obtains more funds in its treasury, the runway for staking rewards grows; the current staking APY can be sustained for longer because more funds are available to back newly minted OHM. Currently, the 8,000% APY has a runway of about 300 days (see Figure 2). You

can read more about how the APY is calculated [here](#).

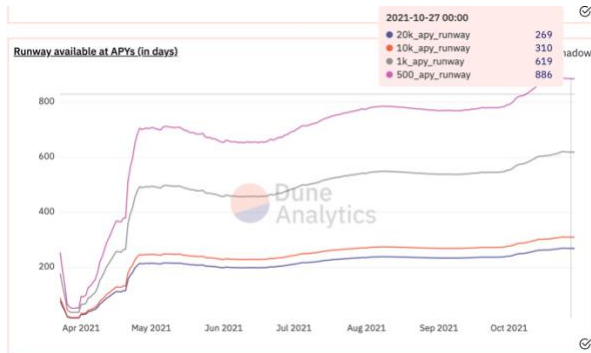


Figure 2: Runway currently available, in days, at different APYs<sup>2</sup>

## Olympus Pro

Olympus, as mentioned before, also partners with other protocols to help them sell bonds through their Olympus Pro service. For example, Olympus partnered with Abracadabra and their SPELL token to allow Abracadabra to sell bonds, using SPELL, for SPELL/ETH LP tokens. This helps SPELL own their own liquidity for that pool, and Olympus benefits for two reasons:

1. A fee on all volume. Since Olympus partnered with Abracadabra and their SPELL token, Olympus gets a 3.3% fee of all bond payouts. So, if a bondholder receives 1 SPELL, Olympus takes .033 of that for their own treasury. This helps align interests and grow Olympus' treasury.
2. Olympus Pro partners are incentivized to integrate the OHM token, increasing its utility.

## Is Olympus a Ponzi? Pt 1

Supplied with a better understanding of how Olympus works, we can now talk about whether or not Olympus is really a "ponzi". I know that word gets thrown around a lot but bear with me. OHM currently trades at around 6x the market value of its treasury, which may seem odd. **Does it really justify this, or will it go up in flames?** I would consider Olympus a ponzi if each OHM was *not* actually redeemable for \$1 now, or if that could be the case in the future. What better way to judge whether this could

ever occur than to imagine the worst case possible: a bank run.

Before we get into that, there's one crucial clarification to make. If you're clever, you may have thought earlier, "how can the treasury back every OHM with at least 1 reserve token (stablecoin) when the treasury is made up of 77% liquidity (LP tokens)?" This is where I was stuck for a bit as well. Obviously, if the treasury receives 1000 DAI, it can mint 1000 OHM and reward that to stakers. However, when the treasury receives LP shares, if OHM was minted based on the market value of those shares, it would put Olympus at risk during a bank-run scenario where those LP shares are drained of the token that is not OHM (for example, if everyone traded OHM for DAI, pulling all of the DAI out of Olympus' OHM/DAI liquidity pool).

Olympus solves this by *not* minting OHM according to the market value of LP shares. Instead, they use the **risk-free value (RFV)**. The RFV is the point at which the LP pool is balanced (a ratio of 1 OHM to 1 stablecoin). We know that Olympus will buy back OHM if it drops below that. To calculate the RFV of LP tokens, this formula is used:

$$RFV = (LP / Total LP) * 2 * \sqrt{\text{constant product}}$$

An example may be needed to understand this. If OHM is worth \$1200, and you give Olympus an LP share of 1 OHM and 1200 DAI, the market value is \$2400. However, the risk free value is:  $1 * 2 * \sqrt{1200} = \$69.28$ . Olympus will mint 69.28 OHM, not 2400 OHM.

What this means is that, if everyone was pulling DAI out of the LP share (like during a bank run), there would eventually be 69.28 DAI and 69.28 OHM in the pool; if users continued trading against the pool, making the price of OHM drop below 1 DAI, you could simply burn your OHM to receive 1 DAI from the treasury.

If you investigate Olympus' StandardBondCalculator smart contract, you

can see the RFV computation in action (see Figure 3). Again, you don't have to trust anyone to actually value LP tokens at their RFV - you can check the code.

```
function markdown( address _pair ) external view returns ( uint ) {
    ( uint reserve0, uint reserve1, ) = IUniswapV2Pair( _pair ).getReserves();

    uint reserve;
    if ( IUniswapV2Pair( _pair ).token0() == OHM ) {
        reserve = reserve1;
    } else {
        reserve = reserve0;
    }
    return reserve.mul( 2 * ( 10 ** IERC20( OHM ).decimals() ) ).div( getTotalValue( _pair ) );
}
```

Figure 3: Pricing LP tokens at their RFV<sup>1</sup>

If that was a bit confusing, the overarching point here is that Olympus only mints OHM that is backed by \$1, even in the worst-case scenario. To do this, if they receive \$0.95 in DAI through a bond sale, they will mint .95 OHM. If they receive an LP share with a market value of \$2400, they will mark it down to the risk-free value (in our calculation, we saw it was \$69.28), and mint that many OHM. Therefore, **every OHM is backed by \$1**.

### Is Olympus a Ponzi? Pt 2

So each OHM really is backed by \$1. But how would a bank run look? Let's say you bought 1 OHM for \$1200, and, immediately after, everyone stops selling bonds to Olympus, unstakes their OHM, and sells it. First of all, if you unstaked your OHM and sold, you'd lose money by selling at a lower price. But what if you held? I'll take an example from the Olympus docs and tweak it a bit.

Let's assume that all users stop selling bonds to Olympus; there is no more treasury growth, so no more OHM is minted. Let's also assume that the percent of OHM staked goes from 92% to 10% as most users rush to sell, aside from yourself and the 10% of other holders who don't. So now, out of the ~3,344,000 (see Figure 4) OHM outstanding, only 334,400 are staked, and you own one of them. The RFV of the treasury is currently ~153,319,000 (see Figure 5). Subtracting those two numbers, we see that 152,984,600 OHM will eventually go to the remaining stakers. Since you own 1/334,400 of

the current OHM staked, you would end up with about 457 OHM, each worth \$1 (unless people begin buying again). You'd lose some money, but not all of it.



Figure 4: Self-explanatory<sup>2</sup>

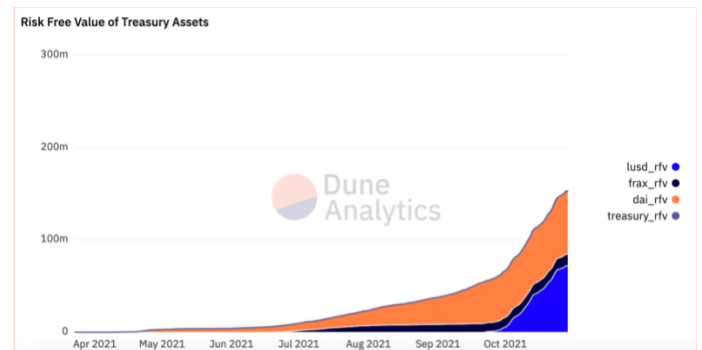


Figure 5: RFV of Olympus treasury<sup>2</sup>

We can create a formula for this. Keeping the 3,344,000 OHM outstanding and the RFV of 153,319,000 constant, the formula would be:  $y = (1/(x * 3,344,000)) * (153,319,000 - (x * 3,344,000))$ , where:  
x = % of stakers remaining, and  
y = amount of OHM you are left with

If we solve for the percentage of stakers needed to result in you having greater than 1200 OHM at the end of distribution, we see that less than 3.817% of stakers would need to continue staking in order for you to break even or gain money.

Now, in real life, if a bank run started and bondholders stopped selling to OHM, there would be far less bonds outstanding and therefore the discount offered to bondholders would grow significantly. This could incentivize large players to sell bonds for this discounted OHM, continuing to grow the treasury, showing confidence in OHM, and incentivizing them to stake.

Basically, what this means is that OHM's ability to trade at a multiple is reliant on the assumption that it will continue to accumulate

money through bonds. Keep in mind that a bank run where the treasury simultaneously receives no inflows is a **worst-case** scenario, and the chances of it happening are extremely low. But it's always good to know the risk you're taking on.

The reason you would buy OHM now, and not wait until it falls in price (it potentially, and probably, will because the high distribution rate will likely outpace demand to a certain extent) to a point that the market cap is closer to the RFV, is that you are essentially paying for a percentage of OHM's future market cap. If you believe the treasury can continue to grow through bond sales and Olympus Pro, your total investment will likely be more over time (number of OHM, which grows as the supply does, multiplied by the OHM price).

So, is OHM a ponzi? I would say no. There is certainly risk, but the protocol is thoughtfully designed using incentives and does not hide this risk from you - *assuming you are willing to look to find it.*

## Risks

Looking at the bank run scenario, we can see that there is risk in place when buying OHM, especially when buying it at a high multiple. The risks are, in order from most likely to least likely (in my opinion):

1. You buy OHM at a high premium, say 6x the RFV of the treasury, and a full-on bank run happens. Depending on the number of remaining stakers during the bank run and the premium you bought at, you may lose money.
2. A smart contract exploit. I put this as the second most likely exploit because Olympus is worth so much at this point, has partnered with so many reliable projects, and had so many forks that at this point a *lot* of eyes have looked deeply at their smart contracts. A possible exploit most likely, but not for certain, would have been found by now. Olympus smart

contracts are also being audited by Runtime Verification.

3. One of the stablecoins that make up most of Olympus' treasury losing its peg (trading at significantly less than a dollar). Olympus carefully chose their stablecoins for this reason, but it's a risk. This would be catastrophic.

## The Future of Olympus

Olympus continues to roll out Olympus Pro to new protocols, and they are releasing v2 of their own mechanism soon. v2 includes on-chain governance of certain bond premium variables, allowing OHM paid out to bonders to already be staked automatically, **allowing outstanding bonds to be held as NFTs to be sold on secondary marketplaces**, and fixed-expiration-date bonds (rather than just a fixed-term, like 5 days). They have also begun accumulating ETH for their treasury rather than only stablecoins and stablecoin-based LP tokens, and they will likely expand into more assets.

## Team Summary

Olympus DAO was created by a pseudo-anonymous founder, who calls himself Zeus, along with a distributed pseudo-anonymous team. It *is* a DAO, meaning that the community helps run it. Decisions are discussed via Discord and an online forum created specifically for Olympus DAO governance, and they are voted on by token holders.

The team has shown tremendous skill in and community building and bringing legit protocols into Olympus Pro, and they are properly incentivized through large OHM holdings.

## How to Buy

The easiest way to buy OHM is by swapping ETH or DAI for it on Uniswap or Sushiswap. Beware high gas fees! You can then stake it through their website.



**Citations**

- <sup>1</sup> <https://github.com/OlympusDAO/olympus-contracts/tree/Version-1.1/contracts>
- <sup>2</sup> [https://dune.xyz/shadow/Olympus-\(OHM\)](https://dune.xyz/shadow/Olympus-(OHM))
- <sup>3</sup> <https://app.olympusdao.finance/#/dashboard>
- <sup>4</sup> <https://olympusdao.medium.com/dai-bonds-a-more-effective-sales-mechanism-c9a57586f1f7>
- <sup>5</sup> <https://docs.olympusdao.finance/main/>

**Links**

**Website:** <https://www.olympusdao.finance/>

**CoinGecko Listing:**

<https://www.coingecko.com/en/coins/olympus>

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