

Balancer: The Yield Bearing Asset Thesis

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TL;DR

This article encompasses Balancer's thesis that the yield-bearing (YB) market will continue to dominate DeFi market share and that Balancer Technology will become the focal liquidity hub for YB assets.

Specifically, this article provides everything you need to know about why Balancer is the most attuned decentralized financial technology layer to host YB assets. It begins from the basics, providing an overview of YB tokens, AMM mechanics, and the current problems with YB swap pricing; it then explains how Balancer provides an optimal solution, and finally, how V3 presents itself as the Yield Bearing endgame.

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Section 1: The Proliferation of Yield Bearing Tokens

Dominance of Yield — Bearing Tokens

With over \$160 billion in circulation, Liquid-Staked Tokens (LSTs) and stablecoins have grown to become DeFi's most

dominant sectors. Yield Bearing (YB) Tokens have become one of DeFi's greatest efficiencies, and Liquid Restaking Tokens (LRTs) look set to create exponential growth in YB liquidity. Yet, whilst we sit here today, no technology efficiently accounts for or more importantly, interlinks the true powers of these composable and rewarding YB assets.

<https://dune.com/balancer/lst>

There is no denying that DeFi unlocks a degree of composability unattainable within traditional finance. Unlike the siloed/archaic systems of the past, programmable smart-contract technology seamlessly interlinks assets and protocols together, compounding the full spectrum of financial capabilities into one powerful position. The potential of this highly attuned DeFi stack is limitless.

For example, LSTs offer the possibility for users to grasp the benefits of network security staking while simultaneously leveraging the effects of providing liquidity to an external DEX or lending market. Stablecoins are also seamlessly staked in contracts that unlock exposure to off-chain treasury yields, integrated into DEXs, and utilized in lending markets far and wide. With the creation of blockchains and tokenization, the efficiency and connectivity of digital assets are greater than ever before. The role of the DeFi application layer is to put these highly efficient assets to work and unlock opportunities for sustainable yield generation.

Where the Tech Falls Short

This, however, is where the current technology falls short. Existing DeFi technology has yet to pierce into the YB, sustainable and efficient realm. From inaccurate swap pricing, manipulated pricing oracles, and rampant inflationary emissions to inaccurate AMM logic and Loss Versus Rebalancing (LVR), DeFi has yet to showcase the true efficiencies it preaches. To truly realize its potential, the underlying infrastructure and architecture must be Yield Native down to its core.

Yield-bearing tokens such as LSTs and interest-bearing stablecoins offer an additional layer of efficiency compared to their vanilla counterparts. Their rise was an inevitability: Why utilize a base asset when you could hold an asset that harness inbuilt yield accrual? These tokenized assets allow all users to gain exposure to both on-chain and off-chain interest rates, compounded within a single token. The rise and adoption of these YB assets was so rampant in fact that the underlying technology was pushed beyond its limits; to date, most of DeFi uses outdated infrastructure that doesn't properly account for assets that have an internal yield-generating mechanism. More specifically, almost all AMMs that host an LST or staked stablecoin utilize logic that exemplifies Loss Versus Rebalancing (LVR).

From a high-level overview, LVR refers to the opportunity cost (losses) that liquidity providers absorb when depositing tokenized assets to a DEX. This is due to the deviations in price that arise between assets on traditional order books and Automated Market Makers. If Liquidity Pools become highly impacted by LVR, the benefits of liquidity provision are funneled off to the traders, resulting in a position that performs poorly relative to holding the underlying assets. Put simply, many liquidity providers within LSTs and staked stablecoin positions would be better off just holding the underlying token. To understand why this happens, we must first briefly recap the fundamental architecture of Automated Market Makers, or, as you probably know them — AMMs.

Section 2: Loss Versus Rebalancing

AMM Overview

Automated Market Makers provide one pivotal DeFi function: they allow users to trade tokenized assets on an immutable, trust-minimized, and smart contract-powered decentralized exchange. The specific logic (often known as an invariant or a curve) in which these assets trade depends on the specific AMM utilized. For stable assets, assets traditionally trade via a stableswap AMM, for volatile assets, a constant-product AMM and for volatile flexibly weighted pools, a weighted math AMM. The unique logic that an AMM implements determines how the accounting and balance/prices of the assets are handled within the pool.

When any swap occurs on a DEX, the asset flows through the most efficient route available. For example, if one swaps ETH > USDC, the swap would flow through an ETH / USDC pool. The trader would sell their ETH, and all LPs would absorb the sale, essentially becoming buyers of ETH at that specific sell price. Everytime a swap occurs, the price of the underlying assets change, isolated within that specific pool. This means that assets within LP positions trade at slightly different prices to one another and between assets on Centralized Exchanges (CEX). Each time a swap occurs, asset price deviations appear between different pools with the same assets, and between DEXs and CEXs.

Arbitrage Trade

It's this deviation in asset prices that gives rise to an integral part of AMM design known as arbitrage trade. Arbitrage traders are entities who continually scope out two assets with different prices in different markets. These traders buy assets at a stale or 'undervalued' price in one market and then sell them to a separate market that values the asset higher. The profit these trades make is known as arbitrage. Arbitrage traders aim to scout out stale prices and then converge market-wide prices via rebalancing Liquidity Pools across multiple markets; it's the cumulation of a vast number of these trades that contributes to a large source of swap fees for LPs.

Loss Versus Rebalancing

However, it's intuitive to note that for any profit, there must also be losses — not everyone can win, and with only two participants in an AMM (traders and LPs), it becomes apparent that it's the liquidity providers that incur these losses. Loss Versus Rebalancing appears when the profits of the arbitrage (traders) outweigh those of the LPs' underlying swap fees and token rewards. When this happens, the underlying LP position would actually be better off just holding the assets. The reason that this occurs is that arbitrage traders harness an asymmetry of information, they can scour across multiple markets in real time, front-run swaps, and sandwich attack unbeknownst traders with on-chain liquidity providers having no option but to take the other side of the trade.

Needless to say, this is of course not the goal of DeFi. Liquidity positions should provide users with open access to a financial technology that offers an opportunity to all — not just to those sophisticated enough to engage in arbitrage trade. LVR is evident across all of DeFi but it is particularly exemplified across YB markets.

Yield Bearing Arbitrage

Currently, almost all YB tokens utilize swap logic designed for assets directly correlated to one another 1:1. Evidently, this is not

the case for LSTs or YB stables. The result? For almost every LST/Yield-bearing stablecoin liquidity pool in DeFi, liquidity providers have the underlying staking yield continuously siphoned off to arbitrage traders due to inaccurate AMM swap pricing. This point is vital to understand: If a user swaps into an LST, deposits into an ETH / LST pool, holds for a duration, accumulates swap fees, withdraws, and redeems back for the base token after a duration, the LP's cumulative losses from arbitrage and siphoned yield can

outweigh the underlying change in token ratio; In the end, the user would have been better off just holding the LST token. So, is there a solution?

Section 3: The Balancer Solution

The Balancer Tech stack is unlike all other DEXs within DeFi and it largely comes down to the Vault. If there's one thing you should understand, it's that the Balancer Vault separates AMM logic from token management and accounting. All token management/accounting is handled by the Vault with AMM logic external and individual to each pool. This unique architecture pioneered customizable AMM design by creating a launchpad for teams to focus on innovating with different AMM strategies without worrying about low-level token transfers, balance accounting, security checks, and smart order routing. To summarise, this central Vault removes the complexities of building a DEX from the role of AMM innovation, meaning that anyone can implement custom logic and harness the benefits of DEX infrastructure from the get-go.

It's this architecture that allows Balancer Technology to very quickly adapt and evolve with the ever-changing market dynamics.

Rate Provider Technology

With the flexibility that Vault architecture permitted, Balancer Technology began orienteering towards yield-native pool design, engineering an external mechanic on YB pools to ensure LPs can harness the inbuilt LST/YB stable yield accrual. Rather than employing just StableSwap logic for YB Tokens, Balancer implements a Composable Stable Pool; A stableswap pool that integrates an additional contract known as the Rate Provider. The Rate Provider does what the name implies — it provides AMM swap logic with the current and correct rate for YB tokens.

Rather than trading at 1:1 (as a traditional stableswap would), upon every YB swap on the DEX, the AMM plugs into on-chain rates or pricing oracles, such as Chainlink, which offer an aggregated and decentralized source for the current YB token ratio. This means that as the price of the token naturally rises, the pool continually accounts for it to ensure there isn't a constant arbitrage and LP loss available due to the incorrect 1:1 pricing. Ultimately, this simple contract drastically reduces LVR and ensures that Liquidity Provider YB yield is NOT siphoned off the arbitrage traders. It's really that simple, but it is a mechanism that would be far harder to implement with a traditional DEX structure due to logic and accounting being internalized together.

This simple mechanic is a game changer for Yield-Bearing token protocols and has led to Balancer becoming a dominant technology host of these tokens.

Composability

Composable stableswaps don't just allow for correct YB pricing; these pools allow for the seamless integration and nesting of an LP within an LP.

External LST and stablecoin providers have two goals when integrating assets on a Decentralized Exchange; firstly,

efficiently grow liquidity, and secondly, ensure an efficient mapping for swaps to other assets. Often, the most efficient mapping possible would be a gas-efficient connection to a host of other tokens. For example, sFRAX is a Yield-bearing stablecoin built by Frax Finance. Upon deployment, the only source of liquidity for this token was direct minting on Ethereum, however, with the goal of network expansion and growth, Frax looked to grow liquidity on L2s. What liquidity pool configurations do you think would ensure an efficient mapping and swap route for users to enter this asset?

As a stable asset, it makes sense this token can easily be accessed via another stablecoin, but which ones? Ideally, a collection of the most liquid stablecoins on the network. On Arbitrum, this is USDC, DAI, USDT, and USDC.e. Balancer already hosts an LP of all these stables with very low swap fees to accommodate gas-efficient swaps. This LP token is also an ERC-20 token and can act as a hop for swaps into and out of the assets within. The problem with other DEXs is that pairing sFRAX with this LP token would usually be extremely gas intensive due to every swap requiring a MINT function of the LP to occur.

Composable stablepools on the other hand, mint an effectively infinite amount of their LP tokens at the time of pool creation. This helps reduce gas costs because instead of using the mint/burn mechanism to join a pool, it uses a transfer on a join/exit, which is far less gas-intensive. This nesting feature allows Balancer to consolidate liquidity into some of the most common groupings, which results in deeper liquidity and better prices throughout Balancer.

Innovation Multiplied

Balancer's unique Vault structure not only makes it a flexible base layer for Balancer Labs to innovate but it also makes it seamless for all developers in DeFi to build custom Yield-Bearing swap logic. One innovative example is Gyroscopes Custom Elliptical Concentrated Liquidity Invariant.

Unlike any other form of concentrated AMM curve, Gyroscope's E-CLPs provide passive liquidity management; instead of users setting price bounds themselves, the pool deployer takes on the responsibility of calibrating and establishing the trading parameters upon launch. The result is that when a user engages with the pool, it functions just like any other Balancer pool — No rebalancing or bound adjustments are required.

E-CLPs intertwine a simplistic stable swap pool UX with the efficiency of concentrated liquidity. This not only vastly improves user experience but also mitigates the risks of the trading price frequently exiting the user-set price bounds. A distinctive feature of E-CLPs lies in their non-uniform liquidity profiles. Harnessing the curve of an ellipse allows for highly customizable trading profiles and can even be used to approximate many other common AMMs structures. This design provides a highly adaptable trading curve that allows the pool composer to purposefully design areas of high and low price impact.

For example, by leveraging Balancer's rate providers (that utilize onchain queries or chainlink oracles to update the correct ratio of LST tokens) an LST range can be programmatically accessed by the pool creator, concentrating liquidity around the current ratio, and residually reducing it at other ratios. This means that, unlike traditional CL, E-CLPs are perfectly suited to accommodate LST growth. E-CLPs also enjoy increased LST yield exposure due to the E-CLP's asymmetric elliptical curve, which minimizes idle ETH.

"The E-CLPs leverage Balancer's customizable AMM logic. As a result, we could focus all effort on the core technical challenge of building the pricing curve while relying on seamless integration with existing Balancer infrastructure to bring it to market." — Arian Klages-Mundt, Superluminal Labs (developer of Gyroscope)

Core Pool Mechanics

Sometimes evolution occurs due to miraculous events. A technical oversight by Balancer on the initial Composable stable pool logic resulted in an unexpected innovation. Balancer Labs noticed that the protocol fee collector contract was amassing unusually large amounts of wstETH from the wstETH/wETH composable stable pool. Upon investigation, Balancer discovered that due to the rate provider, the contract was collecting a fee based on the Yield-bearing token's natural appreciation with part of the yield mistakenly collected as a protocol fee.

The contract assumed that the difference in value between two joins/exits was due exclusively to swap fees. While accidental, it was this discovery by Balancer Labs that unlocked an innovative source of revenue generation. Instead of relying on revenue generated via swap fees, Balancer can utilize YB fees to ensure a revenue source purely as a function of how deep the liquidity in the pool is. This point is extremely important to understand — Unlike all DEXs in DeFi that are solely reliant on swap volume to generate fees, Balancer can generate revenue as a direct function of TVL. This unique mechanism has opened the door for a key liquidity incentivization feature — Core Pools.

What happens when you combine the dominant and rapidly growing DeFi asset class with a unique revenue generation mechanism? A focalized liquidity growth strategy around YB assets. Core pools are exactly that — Yield-bearing pools in which a portion of all fees are redirected back into the pool as incentives. Combining this with a unique fee structure means that incentives effectively scale in direct correlation with TVL. However, rather than directing these fees as direct liquidity mining incentives they are deposited as bribes on vote markets. The reason for this is that there are often vote market discrepancies due to incentivization token volatility, total votes, and total bribes. It is these constant fluctuations that result in bribe ROIs averaging higher second-order incentives relative to direct incentives. Put simply, on average, \$1 bribe returns more than \$1 in BAL incentives.

To qualify as a core pool, the LP must contain at least 50% of the liquidity as Yield-bearing, or harness ve8020 tokenomics. The core pool structure essentially means that yield-bearing protocols unlock an ongoing source of liquidity incentivization with Balancer. This has led to external protocols also leveraging the vote markets to further grow LP liquidity. In total, \$13.15 million has been deposited on Balancer vote markets to incentivize veBAL holders to direct BAL emissions to their pools. On Aura, a liquidity layer built on top of Balancer, \$20.3m has been deposited as incentives to incentivize vAURA holders to direct both BAL and AURA to their pools.

With Balancer V3 looming on the horizon, these figures look set to increase.

Yield Bearing Liquidity Provision

While Balancer unlocks the highly attuned Yield-Bearing tech stack, it is not the only interface users can engage with to deposit liquidity. The Balancer ecosystem can be thought of as three distinct layers. Let's break down what these are and how the full Balancer Ecosystem stacks together.

1. Technology Layer — Balancer
2. Liquidity Layer — Aura Finance
3. Autocompounding Layer — Beefy Finance

We have discussed how Balancer Technology is yield-bearing native, but what about the interface that users directly deal with? Users provide liquidity to the DEX to earn swap fees, and for liquidity pools with a gauge approved, these users can also earn BAL incentives. The amount of BAL incentives an LP position receives is a function of 2 factors.

1. Share of total liquidity within the Pool
2. veBAL Boost

The share of total liquidity within the pool is self-explanatory, but the veBAL boost can be a little confusing. Essentially, the amount of BAL liquidity mining incentives a user receives is relative to how much of Balancer's governance token they hold, with a maximum LP boost of 2.5x. However, directly holding veBAL in a wallet is not the only way to max boost rewards, and this brings us to the second layer in the Balancer ecosystem tech stack.

Aura Finance

Aura Finance is an aligned and symbiotic liquidity layer that plugs into and builds off the Balancer protocol. Just like Convex does to Curve, Aura acquires Balancer's native governance token, veBAL, and plays a pivotal role in providing network participants with an additional composable layer to build liquidity and incentivize liquidity pools.

Liquidity providers can stake Balancer Pool Tokens (BPTs) to earn BAL and AURA incentives, AURA holders can stake for vAURA and harness a portion of veBAL voting power Aura holds, and protocols can offer voting incentives to efficiently incentivize pools with BAL (and AURA) emissions. With a large sum of veBAL POL, Aura pools also unlock max boosted BAL rewards

for users. This means that a large sum of Balancer liquidity ends up flowing to Aura to gain exposure to max boosted BAL plus AURA rewards.

Additionally, as explained above, for external protocols looking to grow liquidity on Balancer, the vote markets provide an efficient means to incentivize pools and instigate ongoing liquidity growth flywheels. Historically, the resultant emissions flowing to LPs via protocols depositing voting incentives have been greater than the voting incentive itself and have paved the way for core pools to grow to considerable liquidity on Aura. This mechanism intertwined with Aura's veBAL holdings has allowed protocols to bootstrap liquidity through extremely efficient Aura Finance incentive strategies.

Beefy Finance

So far, we have discussed the underlying technology layer — Balancer, and the liquidity layer — Aura. This leaves the final autocompounding layer — Beefy. Yield Bearing Tokens provide a powerful function: Grow more of the assets you have. In line with this, Beefy Finance or similar auto-compounding protocols allow users to deposit Balancer or Aura LP positions into Beefy and automatically compound all liquidity mining incentives back into the YB position. This unlocks a passive liquidity management layer that focuses growth into the underlying Yield-Bearing native LP tokens.

Section 4: The V3 Endgame

While Balancer V2 architecture pioneered Yield-bearing features such as Rate Providers, simplified YB AMM innovation, boosted pools, and core pool mechanics, some bottlenecks also arose. A new technological iteration is required for Balancer to truly cement itself as the undeniable Yield Bearing Hub.

Balancer V3 doesn't just solve current bottlenecks; it supercharges all YB capabilities.

Yield Native V3 Vault

Balancer V3 provides partners with a simplified hub to streamline AMM innovation and optimize interest-bearing liquidity. From a vastly simplified developer experience, 100% boosted pools, LST base pairings, and developer pool hooks, V3 is primed to usher in a truly Yield-bearing native technology layer.

One issue with V2 is that each pool must handle the rate scaling of YB assets internally, duplicating code and increasing overall system complexity. For V3, this is managed within the Vault meaning that all current and future pool types inherit rate scaling by default for any LSTs or ERC-4626s. With YB complexities managed natively within the Vault, V3 simplifies and reinforces the security of the underlying Yield Native technology stack.

The V3 rehaul and simplification of the Vault supercharges the ability for developers to build and innovate around YB liquidity while also drastically simplifying the ability for external protocols to interface with Balancer liquidity. Similar to Uniswap V4's Hooks, Balancer Hooks will allow customization of actions before and after pool contracts are called. Combined with a yield native vault, developers will be able to seamlessly implement unique smart-contract features around YB liquidity.

The Yield Bearing Hub

Balancer V3 will preference LSTs and Yield-bearing tokens over base tokens. With an infrastructure designed from the bottom up to properly account for yield-bearing liquidity, Balancer V3 is yield native to its core. This means that rather than pairing tokens with the native ecosystem token such as ETH / AVAX / MATIC, a vast majority of liquidity on the DEX would be paired with an LST alternative.

Because... Why utilize a base asset when you could hold an asset that harnesses inbuilt yield accrual?

~0% Swap fees

With the rise of aggregators, the role of onchain swaps has begun to abstract away from direct user interaction with the DEX swap interface. Instead, aggregators allow users to utilize an external interface that scours all Liquidity Pools and directs swaps through the most efficient route.

For DEXs, this means that instead of onboarding users directly to the swap interface, the focus concentrates on efficient pricing. With this in mind, there are three fundamental pillars for pools to see volume routed through them.

1. Liquidity Depth
2. AMM efficiency
3. Swap Fees

Liquidity depth is a function of AMM efficiency and incentive mechanics. For Yield-bearing assets, we have explained how Balancer excels at both due rate provider tech and core pool mechanics. The final piece of the puzzle is swap fees — If two pools with the same liquidity depth trade utilizing the same logic, the most efficient swap route would be the one with the smallest fee. As competition amongst DEXs to dominate volume metrics increases, they continue to undercut one another to win the most efficient trade. The result? The race to zero swap fees.

Across the board, DEXs have begun reducing swap fees to outcompete one another for swap volume. The problem? If swap fees hit zero, LPs lose out on their only source of sustainable revenue generation. Additionally, every other DEX in DeFi is solely reliant on swap fees for revenue. Balancer is the only DEX in DeFi that generates and redirects Yield Bearing asset revenue back into pools to initiate a sustainable incentive dynamic. For V3, this feature plays a pivotal part in Balancer becoming the unquestionable Yield-bearing hub.

On Balancer V3 there will be a central swap pool — A pool that hosts an LST and its non-YB counterpart. With a Yield Fee mechanism in place, and being non-reliant on swap fees for revenue, these pools can have swap fees essentially turned off, enabling a highly efficient swap route between the base token and any other pool that utilizes said LST. For pool creation on V3, any pairing that would normally utilize ETH / AVAX / MATIC could instead use an LST. With swap fees at, or very close to 0, and offering the best trade routes across DeFi, Balancer V3 will likely see a huge portion of yield-bearing asset volume begin to flow through the DEX.

The result is that Balancer Tech will not only allow YB protocols to innovatively scale incentives alongside TVL, but it will also very likely generate the most swap volume for DAOs native Yield-bearing assets. If external YB protocols wish to grow liquidity depth while simultaneously increasing asset volume generation, Balancer V3 will offer the most efficient hub to do so.

100% Boosted Pools

Balancer V3 will introduce an evolution of boosted pools, known as 100% Boosted Pools that maximize the utilization of all of the underlying pool liquidity into lending markets to optimize yield. Unlike traditional Boosted Pools, 100% Boosted Pools deposit 100% of all liquidity into yield-generating strategies to optimize capital efficiency. Additionally, with the integration of all-new buffers, users can seamlessly swap between base assets (e.g. USDC and DAI) while LPs reap the benefits of pools holding 100% YB tokens (e.g. waUSDC and waDAI). Buffers also contain very simple and limited logic adjacent to the vault, avoiding possible security issues like the recent Boosted Pool incident.

100% Boosted Pools ensure that all assets integrated into single-sided yield markets can harness the power of yield-bearing appreciation. 100% of a pool's liquidity is seamlessly routed to external lending markets whilst the underlying assets are always available for swaps. 100% boosted pools showcase composable and connected smart contract technology and pave the way for sustainable yield generation in DeFi. Additionally, with 100% of the liquidity YB, these pools will qualify as core pools, redirecting a portion of the lending interest rates into efficient vote markets to scale liquidity mining incentives in correlation with TVL.

Outro

From LVR mitigating rate providers to boosted pools and composable stableswaps, Balancer V2 offered a highly efficient playground for managing and growing yield-bearing liquidity, but with an architecture optimized to manage, grow, and innovate the logic surrounding the liquidity of these assets, Balancer V3 is set to become the unquestionable Yield-bearing hub. Balancer is Yield-Bearing native, and V3 will give the tools to all developers to seamlessly innovate and adapt to this ever-growing market.

<https://app.balancer.fi>