Tokemak (v2): Introducing LMPs, Autopilot, and the DAO Liquidity Marketplace

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I. Intro (No tl;dr here, so strap in)

DeFi has changed, and so has Tokemak. Iterating beyond the limitations that constrained v1, Tokemak v2 was developed as an improved system for both liquidity providers (LPs) and DAOs through a novel concept called Liquidity Management Pools (LMPs). The new system comprises two separate products: a dynamic pool allocator that optimizes returns for LPs across different pools and DEXs (Autopilot), and a liquidity order book that enables DAOs to rent liquidity according to a transparent market rate (DAO Liquidity Marketplace).

Tokemak v2 is comprised of both a dynamic LP optimizer and a transparent liquidity order book, facilitating a more symbiotic relationship between LPs and liquidity seekers.

II. Background

The current status quo for DAOs to acquire liquidity relies on gauge systems that incentivize third-party LPs to provide liquidity to specific pools through periodic voting rounds. Using this mechanism, DAOs place incentives in voting markets at a fixed or market rate to influence voters to direct emissions to liquidity pools. Despite its merits, this strategy is subject to certain shortcomings, including an unknown depth of liquidity, a lack of flexibility for adjustments outside of voting rounds, and delayed responses to changes in liquidity needs.

In contrast, LPs face challenges in maintaining exposure to pegged assets (e.g., ETH LST pools), while optimally capturing the variance in yields across pools. Besides the complexity associated with the rebalancing logic of LP positions, this optimization process is prohibitively expensive for most DeFi users due to the inherently high gas costs.

DAOs currently rely on voting rounds to incentivize liquidity providers, facing limitations in predictability, flexibility, and responsiveness. LPs struggle to balance exposure to LP pools and capture yield fluctuations due to complex rebalancing and high gas costs.

III. Tokemak v2: Introducing Autopilot and the Liquidity Marketplace

Tokemak v2 remains true to its original mission of providing DAO liquidity. This is achieved by addressing the aforementioned challenges through Liquidity Management Pools (LMPs) that support different assets across various DEXs. LMPs are the core building block of two products: the Autopilot and the Liquidity Marketplace. These products are specifically designed to provide DAOs with greater flexibility and deterministic control over liquidity, while optimizing and simplifying the complexity of liquidity provision for LPs.

[Take a tour of how the protocol works by clicking here.

](https://www.figma.com/proto/XXveJKkpeZSBpKwCY1yKWD/Diagrams?page-id=308%3A144&type=design&node-id=310-3938&viewport=895%2C546%2C0.04&scaling=min-zoom&starting-point-node-id=310%3A2153)

The first addressable market for Tokemak v2 is focused on liquidity for ETH liquid staking tokens (LSTs). This approach provides a solution for LPs that seek a dynamic and optimal exposure to ETH through ETH LST pools, and it empowers LST protocols with new tools for liquidity management.

Tokemak v2 empowers DAOs and LPs with Liquidity Management Pools. The initial focus is on ETH liquid staking tokens, providing dynamic exposure to ETH for LPs and new liquidity management tools for LST protocols.

III(a). Autopilot

Tokemak's Autopilot is an LP-centric utility that automatically rebalances liquidity across different assets, pools, and DEXs within a given LMP. With its dynamic allocation of liquidity, the Autopilot optimizes and auto-compounds LP returns, while simultaneously abstracting complexity away from the user and reducing gas costs.

To achieve this, the pool allocator logic considers several factors, including yields (i.e., base yield, trading fees, and incentives), exchange rate, underlying LST backing, slippage, and required liquidity constraints that enable the ability to exit any given pool. Additionally, the pool allocator logic verifies the on-chain LST backing and it accounts for the respective premium or discount while conducting liquidity rebalances to optimize its performance.

[Click here for an interactive version of the above illustration

](https://www.figma.com/proto/XXveJKkpeZSBpKwCY1yKWD/Diagrams?page-id=338%3A968&type=design&node-id=338-1022&viewport=553%2C578%2C0.19&scaling=min-zoom&starting-point-node-id=338%3A1022)

Through this rebalancing mechanism, the liquidity supplied to Tokemak's Autopilot reacts to external inputs and captures the variability in yields across different pools. It does so according to a step size and a lookback window. The speed of response to this step size is slower for external inputs and faster for internal inputs provided by the DAO facing product. As such, the Autopilot is a rational market participant, and its rebalancing algorithm defines Tokemak's Liquidity Rate, reflecting the changes in external market dynamics.

To optimize the Autopilot's routing, the pool allocator relies on a solver. The solver can be decentralized by competing off-chain solvers providing an optimal routing solution. An on-chain component then checks if the proposed solution constitutes an improvement and ensures that it does not violate imposed constraints.

The LMPs will utilize the ERC-4626 Standard, enabling seamless integration without requiring the development of custom adapters.

In addition to its value proposition for LPs, the Autopilot can be seen as an instrument that sustainably sources liquidity that is readily available to be allocated to the DAO Liquidity Marketplace. Regardless of fluctuations in liquidity demand from DAOs, all liquidity supplied to the Autopilot is actively deployed and thus designed to generate optimal returns for LPs and fees for the protocol.

Tokemak's Autopilot simplifies LPs' experience by automatically rebalancing liquidity across assets, pools, and DEXs and abstracting complexity away on a simplified dashboard. It optimizes returns by considering various factors and reacting to market dynamics, while the protocol generates fees and ensures sustainable liquidity sourcing — independent of direct DAO demand.

A simplified presentation of the initial backtesting was shared during the last community call and can be found here: https://youtu.be/-kPIC3hd-lc?t=533

III(b). DAO Liquidity Marketplace

The Liquidity Marketplace is a novel approach to liquidity management for DAOs that enables real-time liquidity rental from any given LMP according to a transparent liquidity rate. This rate is determined by market dynamics that define the output liquidity rate discovered by the Autopilot (rebalancing logic).

One of the characteristics intrinsic to this product is the ability of DAOs to acquire liquidity directly and in quasi real-time while skipping indirect incentive mechanisms. As a result, Tokemak's Liquidity Marketplace constitutes a system through which buyers can bid for liquidity at the current liquidity rate. The rebalancing logic treats these bids as internal and prioritized inputs.

It is worth noting that rates are sensitive to the supply and demand associated with this product, meaning that the liquidity rate increases when demand is high, and decreases when supply is high. Although buyers might place bids at any rate, the rebalancing logic will only provide liquidity once the bid is above Tokemak's liquidity rate which represents the market price for liquidity rental. That is to say, the Liquidity Marketplace has a floor rate that is equal to the liquidity rate.

While using this system, LST protocols are able to select a destination across different DEXs, select the desired depth, and deposit incentives to acquire liquidity at Tokemak's rate in real-time. Such flexibility is particularly relevant for LST protocols to reinforce liquidity during events of on-chain liquidations and large validator exit queues. Furthermore, this ensures that buyers pay exclusively for liquidity that is allocated to them instead of overpaying through traditional indirect incentive mechanisms that result in an unknown depth of liquidity.

Liquidity Marketplace, Tokemak's DAO facing product, revolutionizes liquidity management by enabling quasi real-time liquidity rental at a transparent rate. Protocols bid for liquidity directly, skipping indirect incentives, while gaining flexibility, minimizing guesswork and reliance on often inelastic liquidity.

IV. Tokenomics

Tokemak v2 represents a new chapter for TOKE tokenomics. The proposed model is still subject to changes pending future

validation and data collected during the initial phase of the LMP launch. Conceptually, this token design enables users to stake TOKE as collateral for LMPs according to individual risk preferences. In return, stakers receive LMP-specific performance fees for potential slashing risks.

IV(a). Core Mechanics

In this model, TOKE can be staked as collateral to Tokemak LMPs to provide a backstop against losses of principal. Token holders staking TOKE in a given LMP receive LMP-specific performance fees denominated in the underlying asset in exchange for potential slashing risks.

Given that different LMPs have different risk profiles, each staker must decide their exposure according to individual risk preferences. TOKE stakers can therefore improve the perceived safety of LMPs for LPs, thus attracting more deposits. This preserves TOKE's utility of liquidity direction. At equilibrium, the APRs for TOKE stakers reflect the perceived risk associated with each LMP.

IV(b). Slashing Events

The initial scope for Tokemak LMPs lies in liquidity for LSTs, and impermanent loss risks are modest when compared to volatile pairs. Post-Shanghai upgrade, the risk of severe and sustained depegs also becomes less likely due to the arbitrage of LSTs that trade at a discount versus their backing.

Once the LMP-specific losses reported from the respective oracle hit a predefined threshold and the payout condition is triggered, the backing asset is removed from the corresponding LMP backing and placed into a vesting contract. As the asset is moved into vesting, the staking yield associated with the respective LMP increases. This creates stabilizing market dynamics for the protocol during slashing events where the backing asset is moved into vesting, thus being removed from circulation. These mechanics ensure that the backing asset is not immediately liquidated, but rather vests over time.

Furthermore, the backing asset is subject to a cooldown period to prevent stakers from removing funds from the respective LMP once the threshold for losses is triggered.

The steps below summarize the aforementioned slashing dynamics:

1. Oracle reports back losses, the threshold is met, and payout condition is triggered;
2. Backing asset (TOKE) is removed from the LMP backing and placed into vesting;
3. The LMP backing APR increases therefore incentivizing token holders to stake;
4. TOKE vests according to the predefined curve and duration.

The currently proposed token mechanics, pending validation, allow TOKE holders to stake tokens as collateral for Liquidity Management Pools. In return, stakers receive fees from the specific LMP. This incentivizes stakers to back LMPs based on risk profiles and TVL. Slashing events are handled through a vesting contract. Tokemak v2's new tokenomics increase TOKE's utility and reward token holders for participating in the protocol.

IV(c). TOKE Meta-LMP

As Tokemak establishes multiple LMPs with different assets and pools, TOKE stakers gain access to a range of LMP-specific yield opportunities. As such, leveraging the Autopilot's modular design, a TOKE LMP which optimizes returns for stakers seeking to rebalance their TOKE across different LMPs can be created.

Given that staking rewards are denominated in the underlying asset (e.g., TOKE holders staked to ETH LMPs earn ETH), the TOKE LMP rewards can be automatically converted to TOKE and compounded. As a result, TOKE stakers have a passive way to engage with Tokemak v2's utility.

Note: The general model outlined has tradeoffs in terms of both complexity and slashing risks for TOKE stakers. Due to this, there is an alternative proposal under consideration that still provides TOKE utility for both token holders and Tokemak LPs. The core difference of the alternative model lies in the absence of slashing risks for TOKE stakers, enabling a smoother integration of the TOKE LMP.

V. Product Rollout and Expansion Strategy

Tokemak v2 will be subject to a sequenced release, Autopilot being the first product to launch, followed by the DAO Liquidity Marketplace. This release sequence is necessary to sustainably bootstrap TVL using the Autopilot. Once sufficient TVL is reached, it can be efficiently allocated to the DAO facing product according to the existing demand for liquidity.

While the initial roll-out will be focused on pegged asset pools for ETH LMPs, Tokemak v2 aims to expand its product offering to stablecoins, additional stable pools, and lastly volatile pairs. It is worth noting that establishing liquidity rates for

ETH and stablecoins constitutes a priority for v2, mirroring the demand for a dynamic and optimal exposure to these major asset classes.

Tokemak's Autopilot is an ever evolving product. In addition to expanding the addressable market, more destinations for liquidity also benefit LPs, as the Autopilot gains more options for optimization. This not only refers to adding asset classes and destinations on mainnet (Balancer, Curve and Maverick at launch) — but also swiftly expanding to multiple L2s (Arbitrum, Optimism and zkSync) and their native DEXs (e.g. Velodrome).

Tokemak v2 will have a sequenced release, starting with the Autopilot and followed by the DAO Liquidity Marketplace. The focus is initially on ETH liquidity on the mainnet DEXs Balancer, Curve, and Maverick, with plans to expand to additional destinations and asset classes. Deployment on multiple L2s (Arbitrum, Optimism and zkSync) and their native DEXs are part of the near-term roadmap.

VI. Conclusion

The overarching goal for Tokemak v2 is to introduce transparent liquidity rates to DeFi through Liquidity Management Pools (LMPs) that provide improved solutions for both LPs and DAOs. This is achieved through two core products: the Autopilot, which dynamically optimizes returns for LPs across a range of assets, and DEXs, and the Liquidity Marketplace, which enables DAOs to access liquidity in quasi real-time at a transparent rate.

Creating a new dichotomy between static and dynamic options for LPs, the Autopilot autonomously rebalances liquidity across different venues, therefore outperforming a single pool exposure over time. Focusing on the first addressable market for v2, which is liquidity for ETH liquid staking tokens (LSTs), LPs that want exposure to ETH can capture the fluctuation in yields from different pools in a passive manner. As a result, LPs earn optimized returns on ETH while abstracting away complexity and minimizing gas costs.

To achieve this purpose, the Autopilot relies on several inputs, such as the various types of yield, the underlying LST backing, slippage, and liquidity constraints that ensure the ability to exit any given pool. Furthermore, the pool allocator logic verifies the on-chain LST backing, and it accounts for the respective premium or discount while conducting liquidity rebalances to optimize its performance.

By virtue of its adaptable nature and modular architecture, the addition of new destinations for liquidity continuously improves the Autopilot's value proposition. Rather than being viewed as competition, high yielding opportunities can serve as catalysts for the Autopilot's evolution.

Despite the utilitarian emphasis from the LP's perspective, the Autopilot serves another core purpose for Tokemak v2, which is to find the liquidity rate associated with a given LMP, and sustainably source liquidity that is readily available for DAOs. Consequently, the product is not dependent on TOKE emissions. This ensures that regardless of any fluctuation in direct DAO demand, all liquidity remains actively deployed, thus benefiting both LPs and Tokemak.

Complementary to this, the DAO Liquidity Marketplace empowers DAOs with the option to deposit incentives to rent liquidity in quasi real-time at a known rate. This deterministic control enables a novel form of liquidity management where DAOs are able to directly define the desired depth across all integrated DEXs. As such, the uncertainty that is associated with indirect incentive mechanisms for third-party LPs is eliminated. This flexibility enables liquidity adjustments that are decoupled from voting rounds, thus allowing LST protocols to reinforce liquidity during events of on-chain liquidations and large validator exit queues.

In summary, the goal for Tokemak v2 is to create liquidity rates for crucial markets in the DeFi ecosystem through LMPs. By doing so, DAOs are empowered with real-time and deterministic control over liquidity while LPs get open access to a dynamic pool allocator that optimizes returns across all supported venues. Leveraging the existing synergies between both products, the Autopilot constitutes the rational market participant that provides reactive liquidity to integrated DEXs, sourcing both the TVL and discovering the rates that power the Liquidity Marketplace.

Note: A public-facing roadmap can be found on the following Asana board:https://app.asana.com/read-only/Public-Tokemak-V2/1201719920336277/cf9fd05c497a632a8b08fd1f21dd38ba/timeline

Tokemak v2 aims to introduce transparent liquidity rates in DeFi, benefiting LPs and DAOs. The Autopilot optimizes LP returns and sources liquidity, while the DAO Liquidity Marketplace offers real-time access to liquidity at a known rate. This synergy powers Tokemak's goal of discovering liquidity rates for crucial DeFi markets.

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