Economics Design

Sustainable Token Economics

LSDFi Primer

An overview of the web3 LSDFi landscape in 2023

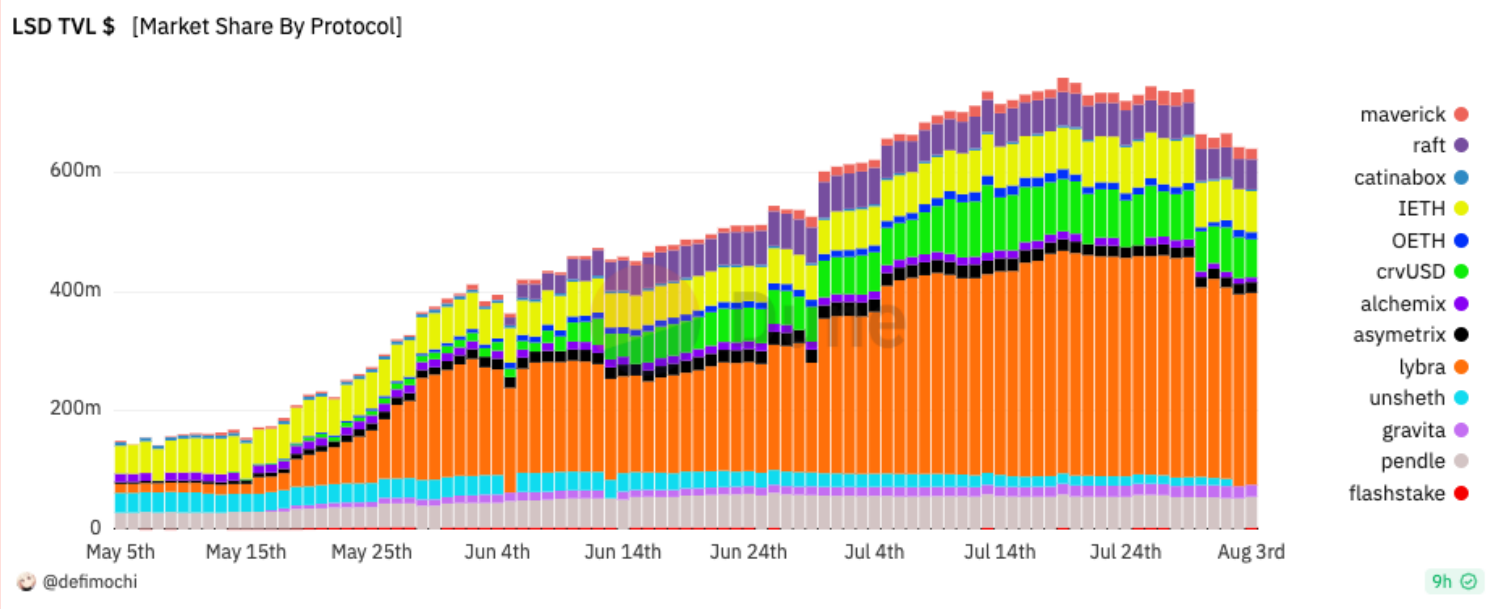
August 2023

Presented by:
Economics Design | **Giovanni Populo and Lin Foong Teo**

TABLE OF CONTENTS

Context

Liquid Staking Derivatives Finance, or LSDfi, represents a new frontier in the world of Decentralized Finance (DeFi). These protocols are built upon Liquid Staking Derivatives (LSDs), providing additional avenues for yield generation. By enabling LSD holders to leverage their assets, these protocols have facilitated a significant increase in the total value locked (TVL) in recent times. The TVL in LSDfi protocols has surged past US$600M, more than tripling within three months, a testament to the growing adoption of liquid staking and the expansion of staked Ethereum (ETH).



The shift of Ethereum to a Proof-of-Stake (PoS) consensus mechanism, coupled with the Shapella upgrade that allowed for staked ETH withdrawals, has spurred a significant increase in staking. This, in turn, has led to the proliferation of LSDs, tokens issued by liquid staking platforms such as stETH, rETH, sfrxETH, and others. These platforms democratize the staking process, lowering entry barriers and maintaining asset liquidity.

The LSDfi ecosystem is a blend of established DeFi protocols that have incorporated LSDs into their offerings and newer projects primarily focused on LSDs. The growth of LSDfi protocols has been propelled by the increased staking of ETH following the Shapella upgrade. As more participants engage in staking, the adoption of liquid staking has also seen a significant uptick.

However, it's crucial to remember that LSDfi is still in its infancy as a market. Like all emerging technologies, it carries inherent risks that users need to be aware of. These risks range from slashing risks, where validators face penalties for not meeting certain staking parameters, to LSD price risks, smart contract vulnerabilities, and third-party risks.

In a nutshell, LSDfi protocols have ushered in a new era of opportunities for LSD holders seeking yield. By incentivizing participation in staking, they could potentially fast-track the growth of liquid staking. As the sector is still in its early stages, it will be intriguing to see further innovations and track the adoption of LSDfi in the future.

Key Players

Along with the rising demand for LSD offerings, we have seen the creation of many protocols specialized in such solutions. In this report, we will highlight 10 of them, touching base on functionalities and key differentiating factors. Protocols are listed in no particular order, but split into three main value proposition categories: CDP Stablecoin, Yield Optimization, and Others.

CDP (Collateralized Debt Position)

CDP stands for “Collateralized Debt Position”, in which investors lock assets and generate newly minted decentralized stablecoins. A good example of this is MakerDAO’s $DAI, which is minted/burned via lock/unlock mechanism in the stability pool.

Yield Optimizers

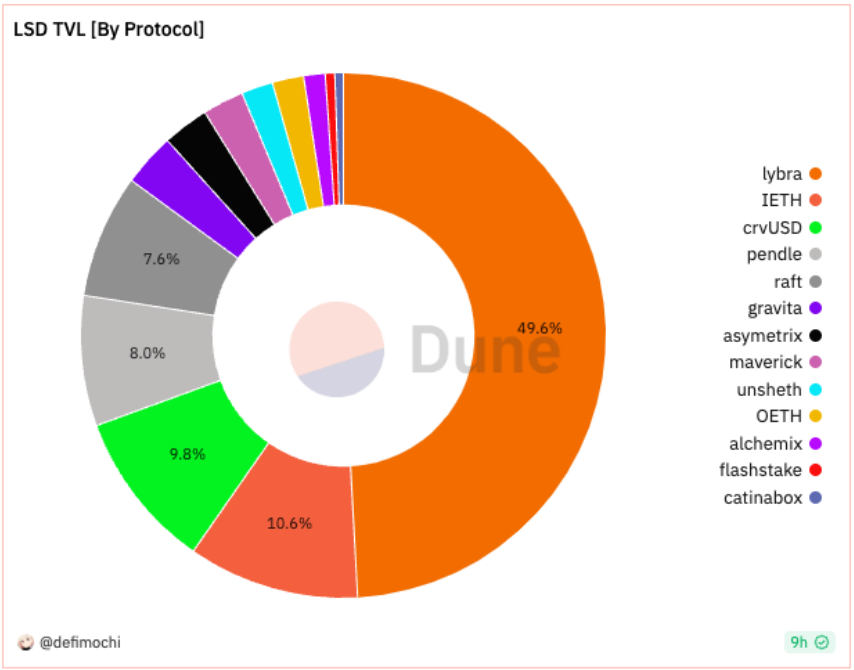
Yield optimizers are protocols focused on generating additional yield on your staked assets. As such, it takes your assets and invests in DeFi strategies, which not only increases return on assets but also underlying risks.
Other categories include Lending/Borrowing, DEX, and Liquid Staking Tokens Indexing.

Sub Sector 1: CDP

Lybra finance

Lybra Protocol is a decentralized protocol designed to bring stability to the volatile world of cryptocurrency. The protocol initially leverages Lido Finance-issued ETH proof-of-stake and stETH as its primary components, with plans to support additional LSD assets in the future.

Lybra has gained significant traction, and currently holds almost 50% of market share in LSD TVL.



Distinctive Feature

A distinctive feature of the Lybra Protocol is that users are exposed to a potential stream of income by holding minted (borrowed) eUSD, which receives income redistribution generated from the deposited ETH and stETH. In other words, when users deposit ETH or stETH and mint eUSD against them, they receive a certain yield in stETH, currently around 7% (as stated in the protocol's dashboard), which is converted to eUSD and finally distributed to them.

eUSD stablecoin

eUSD is an interest-bearing, over-collateralized stablecoin that aims to achieve stability. By offering an interest-bearing stablecoin supported by ETH and stETH, the Lybra Protocol aims to create a pseudo-stable income generation avenue for investors.

Raft

Raft is a protocol that offers an over-collateralized stablecoin backed by LSD tokens, called R. Similar to another DeFi protocol called Liquity, Raft does not have interest rate charges on borrowed capital, but requires a minimum of 120% collateralization ratio on open positions.

Distinctive Feature

0% interest rate — as a user, there's no need to worry about constantly accruing debt. The protocol incurs fees on the opening of the position, which gets redistributed to stability pool providers. There is no interest accrual over time, but rather an obligation to keep collateralization ratio in a healthy situation.

$R stablecoin

$R aims to improve design principles initially introduced by $SAI (Single Collateral Dai) and $LUSD, supposedly offering higher capital efficiency, flexible fees, and efficient liquidations. The stablecoin is backed by LSTs such as stETH (Lido ETH) and rETH (Rocket Pool ETH).

Gravita

The Gravita Protocol, an Ethereum-based decentralized platform, facilitates no-interest loans. This is made possible through two primary security mechanisms: Liquid Staking Tokens (LST) and a Stability Pool (SP).

Borrowers get loans via the minting of $GRAI tokens, possessing a similar volatility mitigation feature as stablecoins such as $LUSD, $R, etc. The loans can amount to 90% of the borrower's staked assets, or as high as 99% if backed by bLUSD.

Distinctive Feature

Stability Providers earn profits when debt positions are liquidated and, according to their docs page, may potentially receive GRVT tokens in the future as additional rewards. In practice, when a “vessel” (debt position) is liquidated, providers will effectively acquire the collateral tokens at the given discount defined by the Max LTV of that asset.

Example:
If a debt position of WETH gets below the threshold of 90%, it will be liquidated and stability pool providers will buyout the collateral according to the spread difference - 10% discount to face value in this case.
Below is a table exemplifying the different types of “vessels'' and Max LTV levels.
Fixed 0% APR: Similar to Raft and Liquity, Gravita Protocol also offers interest-free borrowing. The protocol has a low maximum and fixed one time fee of 0.5% for positions longer than 6 months. Short term borrowers are in turn incentivized to use the protocol with a so-called partial refund mechanism.

$GRAI debt token
$GRAI in this case is an over-collateralized debt token, minted through the lock/deposit of collaterals in the Gravita Protocol. In theory, maximum price is established according to LTV ratios of underlying collaterals (LSDs). They also attempt to create a soft floor at a minimum price through a redemption mechanism, in which it can be exchanged back at a 1 $GRAI = $0.97 of collaterals.
As you can see, there are many similarities between the core stability mechanisms in the stablecoins of comparable protocols. We always also like to highlight the underlying risks of such hard/soft peg mechanisms, especially ones that have not been tested under extreme market conditions.

Add-on: Curve

Curve Finance, a popular crypto DEX, recently added support for LSD assets through their crvUSD stablecoin. crvUSD is now designed to accept ETH LSDs as collateral. As of July 31st, the crvUSD pool takes in LSDs such as wstETH and sfrxETH.

Distinctive Feature

What makes crvUSD interesting is their unique liquidation model, known as the Lending Liquidation AMM Algorithm, or LLAMA for short. When the value of a borrower's collateral begins to fall, LLAMA puts the position into "soft liquidation", which liquidates a portion of the collateral into crvUSD as the collateral value declines. As the value of the collateral rises again, the crvUSD is converted back into the original collateral asset.

NOTE: CURVE FINANCE RECENTLY SUFFERED AN EXPLOIT THAT CAUSED LOSSES OF OVER $47 MILLION. EVEN THOUGH IT IS A REPUTABLE PROTOCOL, IT IS IMPORTANT TO KEEP IN MIND SUCH RISKS.

This mechanism reduces the losses associated with the typical full liquidation approach where the entire collateral amount is liquidated all at once. Moreover, if the value of the collateral swiftly dips and recovers, traditional lending protocols often leave borrowers holding stablecoins rather than their collateral asset, exposing them to larger than necessary losses, which are avoided with LLAMA's gradual liquidation.

crvUSD stablecoin

Curve Stablecoin infrastructure enables users to mint crvUSD using a selection of crypto-tokenized collaterals. Positions are managed passively: if the collateral's price decreases, the system automatically sells off collateral in a 'soft liquidation mode'. If the collateral's price increases, the system recovers the collateral. This process could lead to some losses due to liquidations.

NOTE: CURVE FINANCE RECENTLY SUFFERED AN EXPLOIT THAT CAUSED LOSSES OF OVER $47 MILLION. EVEN THOUGH IT IS A REPUTABLE PROTOCOL, IT IS IMPORTANT TO KEEP IN MIND SUCH RISKS.

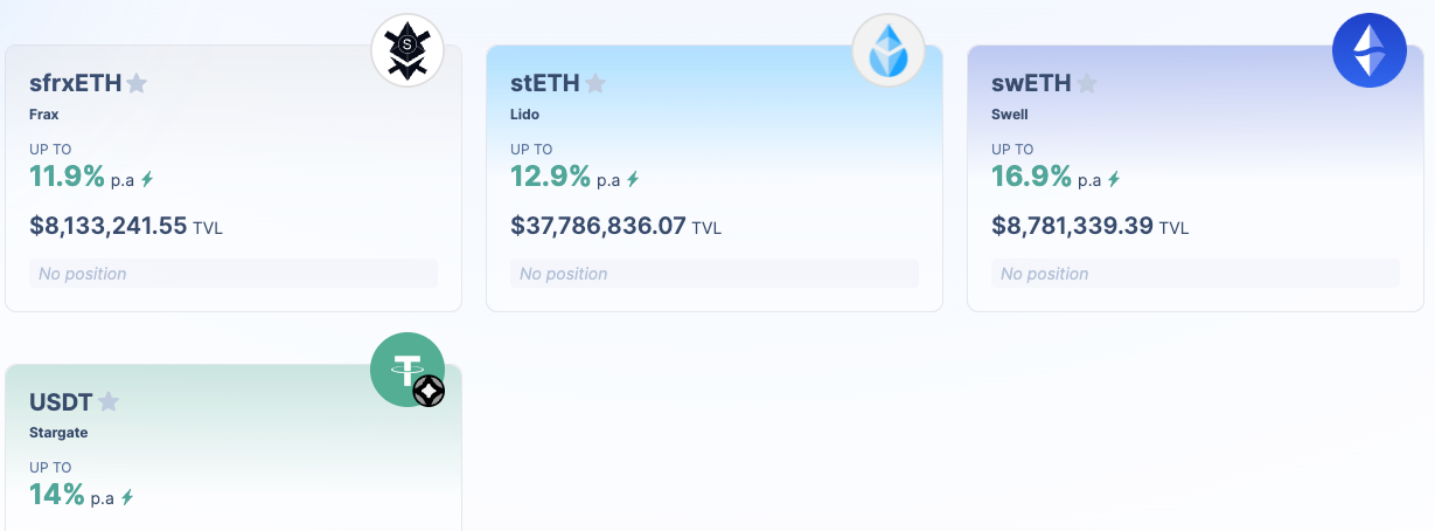
Sub Sector 2: Yield optimization

Pendle finance

Pendle is an interesting protocol, focused on providing yield optimization solutions. In short, assets provided by users (LSDs) are wrapped and split into two key portions: yield token (YT) and principal token (PT). As the name suggests, YT is the asset representing the future yields to be received by the deposit collateral; the PT, conversely, is responsible for holding the rights to the collateral assets (principal). Investors can freely negotiate YT and PT on Pendle's platform, creating additional liquidity for those derivative assets.

The protocol has offerings for LSDs such as sfrxETH, stETH, and swETH, and has also gained a lot of attention recently due to its innovative mechanics.

Note: Pendle was one of the protocols affected by the recent Curve Finance hack.



Distinctive Feature

The protocol offers an alternative for yield generation with fixed APY. Instead of relying on market fluctuations that heavily affect APY, Pendle has fixed yield offerings with a determined maturity rate. To further increase liquidity, the receipt tokens (YT and PT) can be traded on their platform.

Asymetrix

ASYMETRIX PROTOCOL

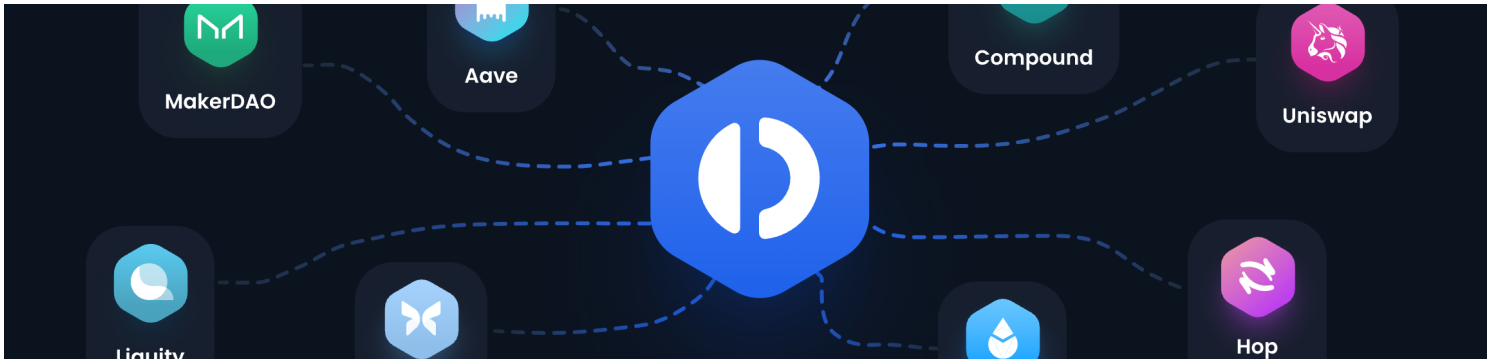
As the name suggests, Asymetrix offers asymmetric yield distribution, which can range from 0-999%. On average, yield generation is likely similar to competing platforms, but it adds this variability spice to attract risk lovers.

Distinctive Feature

Adds variability into the mix, differentiating from the standard predictable yield instruments. Deposit/lock your assets and wait for draw results, without needing to reentry in each one of them.

	Liquid stETH staking	ASYMETRIX
Your main asset	stETH	stETH
Your asset purpose	Generating yield	Generating yield
Withdraw anytime	Yes	Yes
Approximate APR	4,5%	**Random 0-999%** in stETH & 17.55% in ASX
Yield distribution model	Predictable, based on staked amount	Randomly distributed between protocol users

InstaDapp iETH



Instadapp is a legacy protocol, and claims to have the “longest running Leveraged Staked ETH strategy” in the market. Users can deposit ETH/stETH into different vaults that will then execute DeFi strategies and chase yield.

For those who like to go a little technical, below is an attempt to explain iETH’s mechanism:
The leveraged ETH strategy involves the utilization of borrowed ETH on Aave, subsequently transforming it into an increased amount of stETH. To begin with, this strategy engages with instadapp lite, where WETH and/or stETH are deposited. Following this, a WETH flashloan is secured. This flashloaned WETH is then committed as collateral on the Aave platform.

Post the initial collateral deposit, the strategy continues with the borrowing of additional WETH on Aave. The borrowed WETH undergoes conversion into stETH. This newly converted stETH is once again deposited on Aave as collateral. The final step in this strategy sees the repayment of the original WETH flashloan, thus completing the leveraged cycle.

Sub Sector 3: Others

Maverick (DEX)

Maverick is a new decentralized exchange focused on facilitating liquidity provision. It has gained a lot of momentum recently due to its differentiating factors compared to alternatives such as Uniswap, especially those related to concentrated liquidity provision and automatically executed strategies. As this document is targeted towards LSDs, we will not go too deep into its functionalities.

The protocol has attracted a large inflow of funds in the past couple weeks, including LSD assets such as unshETH, wstETH, etc.

Distinctive Feature

Fully customizable liquidity provision. Investors can set their liquidity pools split into individual bins, enabling them to fully reflect their market beliefs in positions. They have also added custom strategies that automatically close and reopen pools according to different rules.

unshETH - LST index

Different from the other protocols covered in this report, unshETH is composed of a basket of liquid staking assets. Instead of creating mechanisms for soft pegging on a dollar value, unshETH aims to sustain the parity of 1 unshETH = 1 ETH (in LSD collaterals).

The protocol offers compounding yield opportunities, the so-called money legos. Investors can get unshETH by locking their LSD as collateral in the protocol, which can then be staked to accrue additional yield.

Distinctive Feature

unshETH differentiates itself from other alternatives through wider acceptance of LSD types (currently 6 in total), as well as offering an ethereum-native derivative instead of dollar-pegged stablecoins.

Alchemix (Synthetic Assets, Lending/ Borrowing)

Alchemix is another protocol that has been running for over a year now, but got traction recently in the LSD narrative. The solution allows you to deposit many different types of assets and to receive a synthetic version of it as a return, up to the max LTV ratio of 50%.

Clearly, these functionalities are very appealing to the Liquid Staking sector, which is eagerly looking for new ways to deploy locked capital.

Distinctive Feature

“Self-paying, interest-free, non-liquidating loans”. In practice, when an investor takes a loan on Alchemix, the borrowed amount is denominated in the native currency he/she deposited, which accrues yield and results in a non-liquidating loan. Further, the yield accrued is automatically used to repay the interest, which increases ease of use, reduces friction and simplifies loan costs.

Note: Alchemix was one of the protocols affected by the recent Curve Finance hack.

Fundamental Risks

Economic Risks

Idiosyncratic Risks

- **Inefficiencies in Pegging Mechanisms**: Assets in the LSD subsector, such as stablecoins and synthetic assets, deploy various mechanisms to maintain their reference price stability. However, these mechanisms have their efficiency questioned in severe market conditions. A key example is the potential 'death spiral' risk associated with algorithmic stablecoins, as experienced by the Terra-Luna ecosystem crash.
- **Liquidity Fractionalization**: Even though LSD solutions were created to increase liquidity for staked assets, there is an intrinsic risk of over fractionalizing this liquidity in multiple protocols. This risk emerges from the creation of multiple silos of liquidity, which potentially weakens the robustness of liquidity pools and could escalate risks.
- **Low Barriers to Entry**: The absence of clear differentiating factors or barriers to entry presents a risk. Larger players in the crypto market could replicate (or 'fork') the solutions offered by LSD protocols and apply them to their already substantial Total Value Locked (TVL), potentially destabilizing smaller LSD projects.

- **Economic Parameter Risk:** The risk associated with unique parameters, such as liquidation prices, maximum Loan-to-Value (LTV) ratios of collaterals, and fees, is a significant concern. The setting of these parameters could lead to cascade effects such as mass liquidations. The relatively nascent stage of most LSD protocols, coupled with their experimental tools or solutions, raises questions about their sustainability and robustness.

Systematic Risks

- **Black Swan Events**: Unpredictable, large-impact, and hard-to-avoid incidents known as Black Swan events pose a substantial threat. Cascading effects resulting from compounded yields, over-leveraging, and intricate interconnections (known as 'money legos') could exacerbate the impact of such events on the LSD sector.
- **Irrational User Behavior**: While investor rationality would ideally lower risks, in reality, investors' actions often deviate from the rational paradigm. This behavior, coupled with over-leveraging, compounded yield, and excessive use of 'money legos', can create systematic risks to the LSD sector, especially under extreme market conditions.
- **Regulation**: Staking activities have been under heavy scrutiny by the SEC, and such protocols could be deemed as money transmitters or securities in the near future.

Future Outlook

The noticeable increase in ETH staking and liquid stakes, especially after the Shapella event, shows a growing market for Liquid Staking Derivatives in Finance (LSDfi) to tap into. At the moment, LSDfi hasn't gone mainstream, with less than 3% of the total LSD market capitalization. But as more and more people owning liquid staking derivatives try to get the most out of their investments, we're likely to see faster growth and more innovative approaches in LSDfi protocols.

If we look at how DeFi has grown, and how 'money legos' developed from the DAI stablecoin from MakerDAO, we can guess that the LSDfi sector could go in the same direction. With all the CDP stablecoin protocols racing to get the biggest market capitalization and Total Value Locked (TVL), we're likely to see more tools and ecosystems based on these services.

We can also expect to see more clever financial tools and products based on LSDs. This could mean new indexes, structured products, automated strategies, and leverage solutions that use LSDs.

Cross-chain bridges and interoperability protocols could help spread LSDfi to more blockchains. And as more blockchains move to proof-of-stake, liquid staking and LSDfi could spread to new ecosystems, not just Ethereum. This would let them make the most of the value in their staked coins from PoS blockchains. In fact, some LSDfi protocols are already starting to use other PoS chains to get more TVL.

Yet, it's crucial for those engaging with these protocols to fully grasp the risks associated with LSDfi. These offerings' stability is contingent on several factors, such as the robustness of the underlying blockchain, the active network participation, and the price volatility of the staked tokens. Being aware of these dependencies is vital in assessing the risk-reward trade-off. This holds especially true as CDP stablecoins in the LSDfi sector, predominantly backed by staked ETH, are fairly recent entrants and can exhibit significant price fluctuations.

Reflecting on the specific idiosyncratic risks we've outlined earlier, users should keep in mind potential inefficiencies in the pegging mechanisms of assets in the LSD sector and the 'death spiral' risk. Another concern is liquidity fractionalization, which could create less resilient liquidity pools. The low barriers to entry mean the possibility of larger players replicating and destabilizing smaller LSD projects. Plus, the setting of economic parameters, still being tested in many LSD protocols, could lead to cascading effects like mass liquidations.

On the systematic risk front, there are threats from unpredictable Black Swan events that could have a large impact due to compounded yields, over-leveraging, and 'money legos'. Investors' irrational behavior can also pose risks, especially when market conditions become extreme. And lastly, regulatory issues cannot be overlooked, as staking activities are under close watch by entities like the SEC, and these protocols could potentially be classified as money transmitters or securities in the future.

As for regulation, this could be tricky because blockchains and staking providers are generally decentralized and the smart contracts can't be changed. This is different from more centralized exchanges and companies that issue asset-backed stablecoins, which can still be regulated by local governments.

In Conclusion, LSDfi has a lot of potential to bring new ideas to the world of staking and DeFi. But to make sure this promising area keeps growing sustainably, we need to educate users well and make sure protocols are developed safely.

For inquires about token economy consulting, please feel free to reach out or send an email to: admin@economicsdesign.com

Economics Design

WWW.ECONOMICSDESIGN.COM

A report by

ECONOMICS DESIGN | GIOVANNI POPULO | LIN FOONG TEO