EMURGO CARDANO SPOT

The Cardano DeFi Report 2023

An Analysis of Cardano's Decentralized Finance Ecosystem

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01 Key Takeaways

- **2023 was the year** of revival of the crypto markets led by the hype around Bitcoin ETFs.

- The launch of Bitcoin spot ETFs was a key moment in institutionalizing the asset class. It opened new doors and made the asset more accessible to users.

- Altcoins were still in the consolidation phase during the year as Bitcoin's dominance grew.

- DeFi, NFT activity, and crypto market funding situations were significantly lower than in the 2021-22 era.

- Cardano had a rollercoaster year in 2023. It saw increased adoption while also facing regulatory scrutiny. The major development focuses were on-chain governance, Ouroboros Genesis, Mithril, Plutus V3, Hydra, and the Partner Chain Framework.

- Cardano DeFi stood out amongst other chains and saw exponential growth in TVL (Total Value Locked), volume, and on-chain activity. The TVL grew 8 times from $50 million to $400 million.

- Minswap retained its market share amongst the DEXs (decentralized exchanges) on Cardano. They have been successful in revamping their tokenomics while maintaining TVL.

- WingRiders and SundaeSwap saw a drop in their market share due to the launch of new DEXs over the year. However, they continue to innovate and push Cardano forward.

- MuesliSwap had a tumultuous year. It grew rapidly at the start and added new products like an option protocol and an index protocol. However, it also suffered from the 'tippage' drama.

- Spectrum, the newest DEX on Cardano, made a splash. It provides new features like adjustable fees and open instant batching, which attracted users and projects to the platform.

- Liqwid launched in Feb 2023 and grew the TVL rapidly to $50 million during the year. As this was heavily incentivized with LQ emissions, it has impacted the token price.

- LenFi was one of the biggest growth stories in 2023. The protocol had $0.2 million in TVL, which grew to $17 million during the year. With its superior tokenomics, LenFi outperformed LQ by a factor of 75.

- Levvy by The Ape Society launched in Q3 of 2023. It is a P2P lending/borrowing protocol with an orderbook model. The protocol has gained traction and was #1 in terms of interest earned during that period.

- Stablecoins were a weaker point for Cardano. They have grown quite significantly but remain a smaller percentage of the overall stablecoin market cap.

How did crypto do in 2023?

2023 was a year of slow and steady growth across all crypto verticals. The hype for a Bitcoin ETF created a major narrative that drove crypto back to a bull market. The ETF provides increased access to retail and institutional capital and regulatory clarity.

We saw continued growth in developer activity and a boom in non-Ethereum DeFi and NFT culture. During the bear market, most of the activity was concentrated on Ethereum, but with improvement across Bitcoin and other crypto ecosystems, DeFi and NFTs are finally blossoming across different ecosystems.

During 2023, the crypto market cap rose by 125% from $750 billion to $1.7 trillion, with Bitcoin leading the way with a 150% price increase from ~ $16,000 to $43,000. This is one of the best performances we have seen since 2020. Let's start by discussing one of the year's biggest narratives — ETFs.

Bitcoin ETF

The narrative of the last 6-9 months had been focused on the Bitcoin ETF. What's the ETF about? To define it in one word - Access.

In traditional finance, over $100 trillion is managed by companies that can only hold or recommend securities. They can't buy Bitcoin (BTC) on Coinbase or don't choose to buy assets that don't have regulatory clarity. While spot ETFs have been available across various countries, the US is the leading capital market and the biggest ladder rung on the access spectrum.

With increased access, we can expect more inflows and users to be onboarded to crypto. With new flows into the system, the asset has the potential to appreciate. This is certainly a highly positive event.

The journey towards the approval of the Bitcoin ETF hasn't been straightforward. The first ETF application was filed in 2013 and has been a constant legal battle. The current US regulators, especially from the Democratic Party, have been viciously anti-crypto. Democratic Party's Elizabeth Warren infamously made "An Anti-crypto Army" a part of her campaign.

Source: Elizabeth Warren X account

After years of legal battles, Grayscale, a large crypto asset manager, won against the US SEC in court, forcing them to approve the spot Bitcoin ETF.

The Bitcoin ETF has the potential to significantly impact the traditional finance (TradFi) system. There is much more ground to conquer, starting with an Ethereum ETF. This could pave the way for other cryptocurrencies like ADA to have an ETF one day.

Spot ETFs aren't the end of the journey but the start of the TradFi journey. There are some things to look forward to such as Bitcoin spot ETFs in HK/UK and other countries, BTC options, inclusion in more mutual funds, pension funds, structured products, corporate treasuries, and sovereign treasuries.

DeFi

Altcoins struggled for the first ten months of 2023 as Bitcoin dominance grew from 40% to 50%. During that time, the market significantly reduced leverage, volume, and liquidity mining programs, resulting in low user yields.

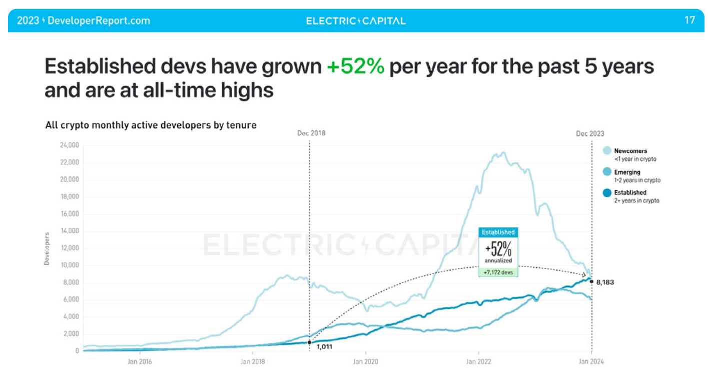
Meanwhile, hacks and rugs stole over $1 billion in capital. The low rewards and high risk made DeFi unattractive. The DeFi TVL remained stable at $40 billion from January to September 2023 while prices were skyrocketing. The stablecoin market cap dropped from $140 billion to $125 billion, indicating a slow exit of capital from crypto in the first two to three quarters of the year.

The market pivoted in Q4 of 2023. Most Altcoin/BTC pairs like ADA and SOL bottomed in Q4 of 2023 and started with their bull market. The stablecoin market cap grew by $5 billion, i.e. 4%, while DeFi TVL grew by 37.5% from $40 billion to $55 billion.

Markets being slow doesn't mean innovation slowed down. The bear market continued to see innovations across DeFi like Uniswap V4's singleton AMM (automated market maker), RFQ DEXs, CLOBs, native cross-chain swaps with Thorchain, cross-chain transfer protocol by Circle/Chainlink, oracle-less lending, tokenization of RWAs (real-world assets) and more.

The developer numbers are a good signal amongst noise. Due to crypto's permissionless nature, developers are hard to gain, but we can approximate them from industry-standard numbers. Electric Capital's report shows us that developers who have been in crypto for 2+ years are at an all-time high after growing at 52% annually for the past five years.

The total number of active developers fell by 24%, mostly due to a drop in newcomers joining crypto during the bull and exiting during the bear market.



Source: Electric Cap Developer Report

NFTs

NFTs have had a bad year. Bitcoin Ordinals captured much NFT attention while established ecosystems like Ethereum suffered. According to Crypto Slam, the volume steadily dropped from $6 billion in January 2022 to $300 million by the end of September 2023. They did see a comeback in Q4 of 2023 with an increase in Ordinal hype on Bitcoin.

Some NFT companies have been in a dire strait due to a fall in creator royalties due to the optional royalty policies of marketplaces. The average rate has fallen below 1%, resulting in companies like Proof shutting down.

VC/PE

We saw around seven quarters of a downtrend as VCs stopped deploying more capital during the bear market. With the improvements in market conditions, funding is coming back now. More VCs are actively deploying, with projects raising 8-9 figures in funding.

On the regulatory side, the US ETFs have opened doors for crypto. Various countries, like the UK and Hong Kong, are reversing their staunch stances on crypto.

Note: *VC & PE funding fell by 68% YoY to $10 billion.*

03 How did Cardano do in 2023?

Cardano had a rollercoaster year in 2023. It started at $0.24 USD, moved to $0.45 USD, dipped to $0.24 USD, and then returned to $0.60+. This was in line with most altcoins during the year.

A US SEC accusation of ADA as a security exacerbated the volatility in a case against Coinbase. This resulted in forced sellers like Robinhood, who sold their customers' ADA at low levels.

Regarding development, we saw one hard fork this year with the Valentine's HFC. This upgrade added support for cryptography primitives, including ECDSA and Schnorr signatures. This enhances cross-chain functionality to improve interop with existing and upcoming Partner Chains.

What are the key things that were worked on during 2023?

- **Governance:** The Age of Voltaire began during ScotFest at the end of 2022. Since then, the Cardano community's focus has shifted toward implementing on-chain governance.

  During 2023, workshops were held worldwide to include community feedback on CIP-1694 (the governance-related Cardano Improvement Proposal). We saw the formation of Intersect, a member-based organization that consists of people and stakeholders from the community. The organization is leading the effort on the governance front and is tasked to push Cardano forward. They are working to form various committees like the Membership & Community Committee or Cardano Civics Committee, which have their aims & focus.

  In the second half of 2023, we got the Sancho Testnet, the first testnet to test governance features. On Sancho Net, you can register as a Delegated Representative (DRep) to test the feature while developers can work to identify any bugs in the code. CIP-1694 is scheduled to be on the Cardano mainnet during the Chang Hardfork.

- **Plutus V3:** Plutus V3 is not on testnet on SanchoNet. It provides an improvement in smart contract adoption and governance, as well as enhancements in interoperability.

  The work is concentrated on adding mathematical and cryptographic primitives, especially ZK ones. Primitives like BLS signatures allow for better signature aggregation to build Quorum-based sidechains, which would be a major upgrade for a side-chain-centric future. Other features include easier verification of ZK proofs and the expansion of Hydra's usability.

With Plutus V3 optimizations, developers can save up to 30% of costs. However, this is expected to be much less impactful for existing dApps than Plutus V2, which brought in a 10x improvement for dApps.

- **Ouroboros Genesis**: Cardano is shifting its networking layer to a full P2P setting. This further decentralizes Cardano and removes any central dependencies. In March 2023, we had Dynamic P2P, which lets you find peers automatically without any manual inputs/trusted entities.

  Ouroboros Genesis is considered the last puzzle piece to allow dynamic availability. This allows any validator to leave/rejoin without trusting other operators. Genesis Lite will have a set of trusted entities as an intermediate step to Ouroboros Genesis.

- **Mithril:** Mithril is a stake-based threshold signature scheme. Validators vote on the state of Cardano at a checkpoint, which is then used to form a snapshot showing that a majority of validators agree with the state at that checkpoint. Users can use this to sync a Cardano node quickly.

  With fewer concerns about bloat, Cardano can increase its block size without losing inclusive accountability. Running Mithril doesn't come with incentives, so we have seen low adoption with <150 SPOs and <15% stake participating in the process. This might be solved in the future through some reward system.

- **Partner Chains Framework:** IOG is focused on developing the Partner Chain Framework and Midnight. The first partner chain to Cardano, Midnight, is expected to focus on onboarding institutions and enterprises. It will run with a minotaur consensus, which allows for combining different types of consensus. Cardano SPOs will run Midnight nodes at Genesis and secure the network for "*DUST*" rewards.

  This framework will allow Cardano SPOs to earn additional revenue by running partner chains using a "merged-staking" concept. It will include a secure bridging mechanism to transfer assets from the Cardano main chain and partner chains.

- **Hydra**: The mainnet went live on March 23, 2023. Since then, incremental improvements have been made to enable applications. Some interesting applications include Gummiworm by SundaeSwap - DeFi on Hydra, NFT Auctions by MLabs, and Hydra-chess gaming.

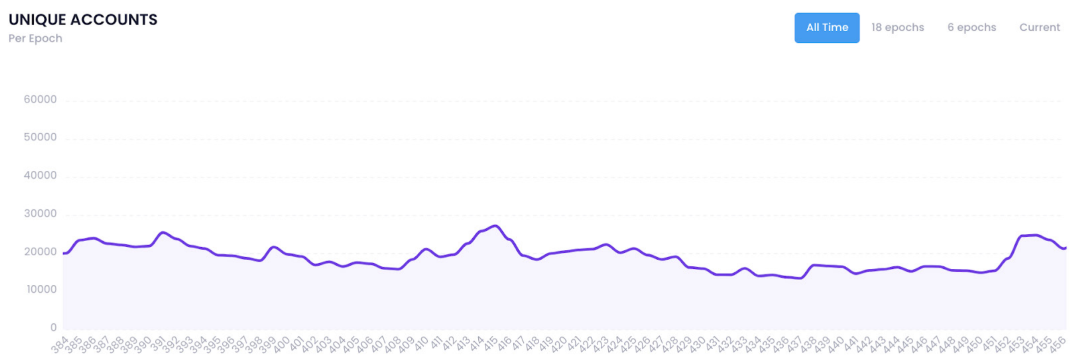
For the rest of the report, we will focus on DeFi projects and not discuss NFT or RealFi-based projects in depth.

04 Cardano DeFi

2023 was a monumental year for Cardano DeFi. The ecosystem's TVL went up 800% during the year from $50 million to $400 million. The chain's DeFi dominance grew from 0.1% to 0.75%, and the chain went from ranking 31st to being in the top group by the end of Q4 of 2023. Excluding a flat Q3, the chain's TVL has grown nearly 2 times each quarter.

Cardano projects are upgrading to Plutus v2/Aiken, updating mechanisms, improving governance, and integrating Hydra/sidechain solutions.

Let's start with how DEXs are doing:



It vastly outperformed the overall DeFi market, which grew only approximately 40% during the year. The surge came from new applications going live and increased yield farming across DeFi. We have seen participation from retail and institutional capital, like Waves & Waffle, in DeFi to earn yield on their assets.

The user numbers for Cardano DeFi have remained relatively flat during the year. Averaging around 20,000 to 25,000 users per epoch.

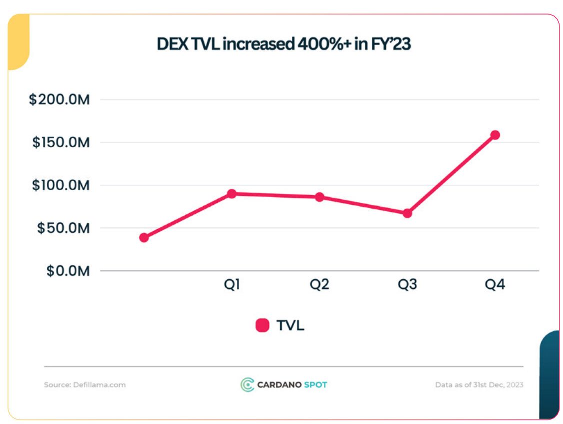
Note: *These are not Cardano's daily users; they are just DeFi. With flat user numbers, the leading hypothesis would be that the growth in TVL and volume came from new inflows from current Cardano users and appreciation of Cardano native assets.*

In 2023, several new projects launched on Cardano across different verticals. The current

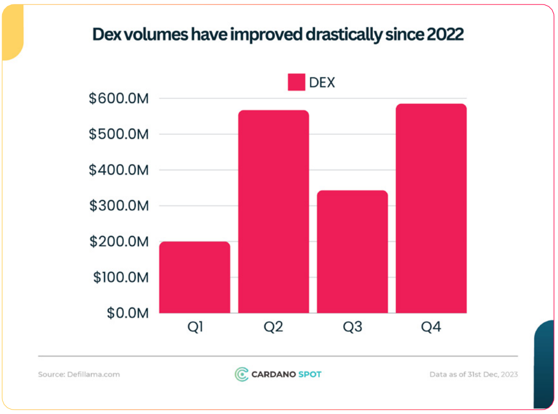
DEX Performance

Cardano DEX TVL has been on an uptrend since the start of 2023, with most gains coming in Q1 and Q4 of 2023. The DEX TVL grew a stellar~400% in USD terms during the year.

Note: *This only shows TVL for DEXs.*



DeFi volumes had high fluctuations during the year. It rapidly increased during Q2 and Q4 of 2023 due to memecoin season. Memecoins have been the #1 asset on Cardano in terms of volume and price appreciation. The second category has been the AI ecosystem, which has garnered much outside interest in Cardano.



Note: *Volume is available only for Minswap, Muesliswap, WingRiders & Spectrum on DeFillama. This should still provide a good picture as they are the top volume generating DEXs.*

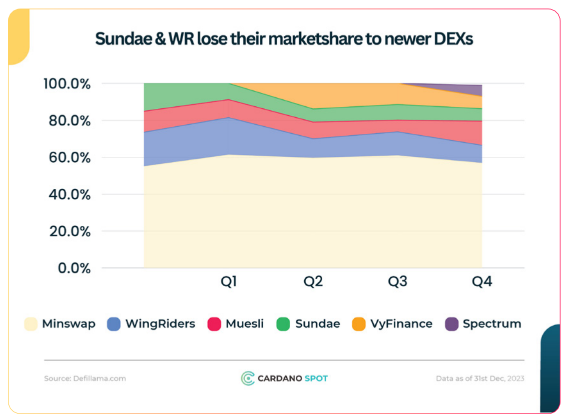
Cardano has 10 DEXs - with 7 AMMs, 1 NFT AMM, and 2 Orderbook DEXs. A common theme across DEXs was a drop in incentives. During the early days, Cardano DEXs offered much higher APY to bootstrap liquidity, but we are slowly moving towards more sustainable levels.

Minswap continued to dominate Cardano DEXs in terms of volume and TVL. The TVL market share was relatively stable at ~55-60%, even with the introduction of newer DEXs.

The #2 spot saw a lot of contention and has rotated amongst WingRiders, MuesliSwap, and VyFi at different points during the year. We won't go into detail about Order Book DEXs since they didn't have much impact during 2023.
The new addition to the Cardano ecosystem were stableswaps from WingRiders and Teddy. They have not received as much volume but are expected to pick up as we see more stablecoins go live on Cardano.

The next major innovation was from Spectrum/Splash, with features like open batchers, quick fills, and dynamic LP fees. This attracted projects like Optim & Butane to launch on Spectrum. Launching in late Q2 of 2023, Spectrum quickly became a top project on Cardano without providing high incentives, giving tough competition to existing DEXs.

WingRiders & SundaeSwap saw the most effect, with their market share nearly halved. The newer DEXs with new features and higher APY were able to siphon the liquidity from these DEXs.



During the year, the volume and TVL grew almost double, showing higher capital efficiency and increased organic trading APY.

DEXs provide great insight into the ecosystem; they are the core infrastructure that showcases the different trends throughout the year. The timeline looks like the following:

- In Q1 of 2023, we started with the first wave of projects like Lenfi gaining recognition and the start of AI hype.

- This was followed by a memecoin season in Q2, which led to the DeFi mini-bull run across Defi projects like MuesliSwap & RealFi projects like Iagon.

- Q3 of 2023 saw a phase of consolidation, with volume and TVL dropping across the board.

- Finally, Q4 was an explosive growth month, with December logging in the highest volume across Cardano. Once again, a memecoin frenzy drove this.

The core issue is that there is little evidence of cross-chain inflows or new users participating in the ecosystem, limiting its growth.

Let's take a closer look at how each of the DEXs has performed:

- **Minswap**

Minswap continued its dominance throughout the year. What's worked for Minswap:

- **UI/UX:** A simple user experience that attracted users to the project. Memecoins primarily launched on Minswap, which helped it catch most of the on-chain volume. At times, Minswap achieved 90% of the on-chain volume.

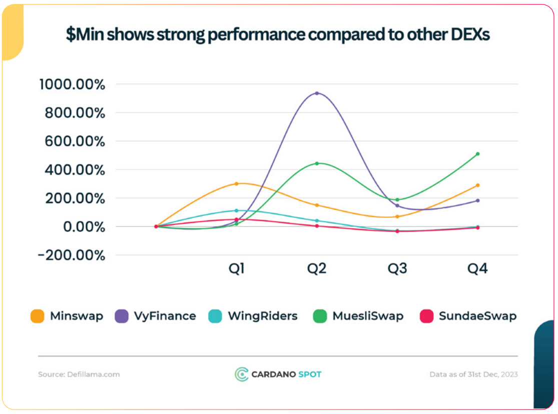
- **High Emissions:** This has rewarded LPs (liquidity providers) and has attracted high TVL, which results in low slippage and better trades for users. This is why, even with DEX aggregators in the picture, Minswap has retained its market share.

- **Protocol-Owned Liquidity:** Minswap is the most liquid project on Cardano, with $12 million in LP. A large portion of this has been able to absorb any emission pressure, allowing it to grow with high emissions

Minswap's token MIN and its tokenomics have been instrumental to its growth, attracting millions in TVL through its yield farming program. In 2023, they worked on reducing emissions and are at approximately 12% annual inflation. This reduction enabled them to burn 40% of the total supply from locked tokens. In the early days, MIN was perceived as a farm token with high emissions and FDV. This resulted in other DEX tokens outperforming MIN. This move was a major indication that Minswap is slowly moving away towards a more sustainable ecosystem.

Meanwhile, MIN DAO (decentralized autonomous organization) introduced staking in $Minomics V2. This redirects the 'fee switch' rewards (0.05% fees from all pools) to MIN holders instead of Protocol-Owned Liquidity. This also includes redirecting 50% of batcher fees to holders. Passing the revenues to holders creates an incentive to hold MIN. The APR on the max boost, a 9-month soft-lock, is ~6%, but the rewards are in ADA terms, and it becomes higher as MIN goes lower. Overall, MIN is still inflationary but is on its path to sustainability.

Reducing emissions + revenue sharing has resulted in MIN's strong yearly performance compared to the competition.

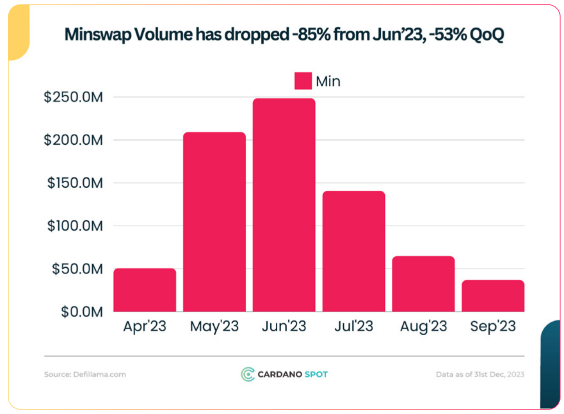


On the tech front, the team is working on launching Minswap 2.0 and Minswap Stableswap. The key features of Minswap 2.0 will be:

- **Rewrite in Aiken** which will boost protocol throughput by 5-10x.
- **Auto-Routing:** Addition of a Smart Order Routing Algorithm to scour for the best prices from multiple pools.
- **Dynamic Fees:** LP fees that can be adjusted according to market conditions to provide a better return to LPs.
- **Advanced Order Types:** Most AMMs only offer market orders. With Minswap V2, users can place different order types, such as Take Profit/Stop Loss, Once-cancel-others, and Zap-out from LP.

Meanwhile, Minswap stableswaps will offer tri-crypto pools to attract stablecoin liquidity. This addresses liquidity fragmentation across stablecoin pools and, importantly, offers users an opportunity to earn high yields on stables. You can read our article with Minswap to learn more about stableswaps.

Minswap had a staggering growth during the year, with TVL growing by 420%. The volumes have tripled. The major volume drivers for Minswap were memecoins, stablecoins, and AI coins.



Minswap has performed strongly during the year. However, it faces strong competition as people move towards DEX aggregators, and the only real moat for DEX remains capital efficiency.

- ## WingRiders

WingRiders nearly halved its market share during Q1 of 2023. While being the #2 DEX for two quarters, WingRiders' token WRT had the lowest market cap amongst all the DEXs, massively reducing incentives for LPs, which in turn caused the DEX to lose market share. This has been a negative spiral that has held the DEX back.

They were the first stableswap on the market and were able to attract Indigo's iAssets and stablecoin Djed to its platform. However, due to the price instability of those "stablecoins," the stableswap couldn't be as successful. This could change with the advent of reliable synthetic assets or stablecoins.

More importantly, they couldn't capture the most volume-generating assets - memecoin liquidity.

To address this, they worked on a launchpad to attract new projects, like Fact & Cerra, to launch using WingRiders. However, there is a lot of competition amongst DEXs to attract new launches.

WingRiders' volume remained relatively flat throughout the year, even though overall Cardano DEX volumes were increasing.

In terms of tech, WingRiders was primarily focused on developing its V2:

- **Limit Orders:** This can help users get orders filled at exact prices instead of incurring slippage.
- **Scalability & Speed:** They are working on off-chain infrastructure to reduce the batcher time to 1-2 blocks, resulting in a 300% increase in transaction speeds.
- **UI/UX:** Improvements like the portfolio viewer and pro chart mode will improve user experience. Tools will also help LPs calculate their PnL.
- **Launchpad:** A launchpad for new protocols to launch their coins written in Plutarch.

The team is currently working on Plutarch-based contracts for their AMM contracts. This will help improve the app's overall throughput.

- ## MuesliSwap

MuesliSwap had a very eventful year. It went from being a stellar success to giving back almost all its progress. The team has always focused on launching new primitives on Cardano, like Concentrated Liquidity, hybrid orderbook + AMM DEX, or the first DEX aggregator.

However, being early doesn't automatically mean a win. MuesliSwap's Concentrated Liquidity had hardcoded ranges, which made it uninteresting to most users. However, the big issue became the siphoning of user funds by the Muesli batcher. The batcher wouldn't offer users the best but rather the lowest acceptable prices. This is unlike how most DEXs work on Cardano.

The lack of liquidity mining made it unattractive for LPs to provide liquidity to the DEX. Furthermore, since the order book doesn't provide the best prices, orders would get routed to other DEXs.

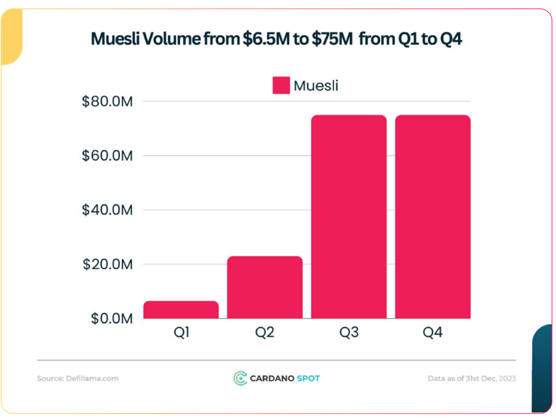
They pivoted to a DEX aggregator model early on. The core idea was to capture fees from routing instead of spending emissions to attract TVL. We don't have any numbers on the DEX aggregator, but it's assumed to have been overshadowed by Hunt, which processes more than 50% of Cardano transactions.

Metrics

MuesliSwap had one of the lowest inflation rates, which has led it to outperform all other DEXs during 2023. However, it had high volatility due to its low liquidity, which averaged around 4-5% of the supply during the year—the lowest among all the DEX tokens. MuesliSwap went from $0.6 to $6 to $1.6 in a few months, making it very volatile for investors.

MuesliSwap's TVL had a tumultuous month; it went to #2 but ended up dropping to #5 in terms of TVL. The volume growth continues to be staggering; the DEX had approximately $2 million in volume in January, while the peak in July was approximately $39 million. The volume is reverting to normal after the spikes in July-August.

The Muesli trio is a major source of volume and TVL for the project.



MuesliSwap launched two tokens directly or as a collaboration during the year: Opt and LiFi. Opt is a derivative platform that will have options and perpetual. LiFi is a structured product that lets you invest in a basket of assets via an index fund.

LiFi is still being tested and hasn't made it to the mainnet; Option Flow has released a very early version of the protocol on Cardano.

In terms of MuesliSwap's technology,

- **Flexible Staking:** Users can stake MuesliSwap's MILK token to earn any trio token, a first-of-its-kind feature in Cardano.
- **Governance:** The team has been focused on decentralizing via governance and allowing for open market making. It has set the necessary governance infra, allowing MILK holders to control reward payout and pool parameters.
- **DEX Aggregator:** The MuesliSwap DEX aggregator has been integrated into sites like Etrnl and Yoroi.
- **MuesliSwap V4:** It will increase the scalability and speed of the order book while introducing new features like order expiry.
- **MILK V2:** Migrating the contract to allow MILK to be divisible.
- **OPT & LiFi:** Working on the code and launching the initial versions of the projects.
- **Catalyst:** MuesliSwap has had several catalyst proposals on various topics, including governance and identity. Those features are expected to launch in 2024.

MuesliSwap had a strong year in shipping products and market acceptance. However, it struggled to find a middle ground for sustainable growth. Let's see what 2024 has in store for it.

- **SundaeSwap**

SundaeSwap's TVL slightly declined over the year in ADA terms as it lost market share to other DEXs. SundaeSwap worked significantly towards improving their UI and tweaking their yield farming rewards.

However, SundaeSwap did not remain a fan favorite DEX for users. Snek, the highest volume driver on Cardano, launched on SundaeSwap and could have changed the game for them. However, Snek TVL and volume moved to other DEXs due to rewards and user preferences.

Sundae Labs is currently working on SundaeSwap V3, a rewrite in the Aiken language. The key features are:

- **Scalable and Cheaper:** SundaeSwap v3 is estimated to do more than 35 swaps per batch, a 10x increase from the current capacity. This will help reduce batcher fees by at least 60% to 1 ADA, benefiting users.

- **Fee Decay:** Pool operators can set increasing or decaying fees for new launches.

- **Protocol Treasury:** Protocol fees would be directed to the SundaeSwap treasury.

- **Optional Routing:** Users can define tokens they want to trade instead of defining the pool. This allows for cheaper and faster routes.

- **Order Owners & Extensions:** Orders can be executed by contracts and have data attached to them, which would be useful to institutions.

- **Order Strategies:** Adding programmability to order types. Batchers can execute an order based on a specific strategy set by a user.

SundaeSwap's yield farming V2, holders can lock its token SUNDAE and vote for pools to redirect yield farming rewards. This is common across DeFi and popularized by the "veTokenomics" of Curve, where emissions have a similar mechanism. This concentration of rewards means a higher APR for the best working pools. It's significantly simpler than rebalancing the farming rewards for dozens of tokens.

SundaeSwap is also focused on Hydra and identity. Their Hydra-based scaling solution, Gummiworm, aims to onboard DeFi to Hydra. It would be interesting to see how it plays out and if SundaeSwap can turn it around.

- **Spectrum**

The Spectrum DEX is an Ergo-based DEX that moved multi-chain with Cardano in Q3 of 2023. In just a few months after its launch, the project gained $10 million in TVL.

Spectrum is one of the fastest DEXs on Cardano, where swaps are generally completed within one block. They are now working on a new version of the project called Splash. The key features are:

- **MEV Reduction:** Splash has an open batcher model where any user can be a batcher. However, this comes with a tradeoff that a batcher will try to extract MEV. With Splash, the batcher/executor will have a public key and reputation, and users can select who can process their orders.

- **Green Orders:** The project will introduce Autonomous Accounts managed by an on-chain entity. Users with an account can place off-chain orders, which can then be executed in a fee-efficient way.

- **Universal Orders:** Orders that any liquidity source can fill and not just AMM source. The order will go under a Dutch auction, and any sources can fill it out.

- **Pool Types:** Splash will introduce different pool types, like weighted pools, that allow for different token weights except for the classic 50/50 AMM. Stableswap pools and dynamic AMM pools that adjust liquidity dynamically.

- **Dynamic Fees:** More flexibility in LP fee settings; you can select dynamic fees to earn more in volatility.

- **High Throughput & Low Fees:** It will reduce the fees by 75% and increase throughput up to 20x from the current 4-5 swaps per batch.

How other projects compete with its speed, throughput, and flexibility is to be seen.

Orderbook DEXs

Cardano uses an EUTXO (Extended Unspent Transaction Output) accounting model that allows for the parallel processing of transactions. The current AMMs don’t utilize this feature; instead, they use it to process sequential transactions in parallel. The other core issue is that AMMs are capital inefficient compared to Orderbooks. This is because the AMM liquidity is passive and doesn’t know the current market price, resulting in constant losses.

This is what excites many people in the Cardano ecosystem about Orderbook DEXs. This would break each order into a different state, which can be matched/batched with other orders. This would utilize Cardano efficiently and liquidity efficiently.

- **Throughput:** Orderbook DEXs are actively managed, resulting in multiple orders being placed/canceled by market makers. This is harder to manage on a chain with lower throughput.

- **Low Liquidity and Volume:** The yearly Cardano DEX volume is nearly 1/50th of Binance’s daily volume.

- **Lack of Priority:** Cardano orders are queued in FIFO (first in first out), which makes arbitrage and rebalancing more difficult for a market maker.

Some of this isn’t Cardano-specific but has been seen across chains. Most chains today are also AMM-dominant. The orderbook model will continue to be challenged in the current low-volume environment.

However, projects like Axo have found innovative solutions using optimized contracts and user-based market-making strategies. It's yet to be seen if they can successfully drive the volume for different CNT pairs.

Lending/Borrowing

Lending and borrowing are the core infrastructure of any financial system. Users can borrow assets they need while others enjoy yield on their holdings. In 2022, Cardano DeFi was dominated by DEXs, and lending and borrowing were almost nonexistent. This changed in 2023 as competition warmed up. It marked the launch of two major projects: Liqwid and Levvy.

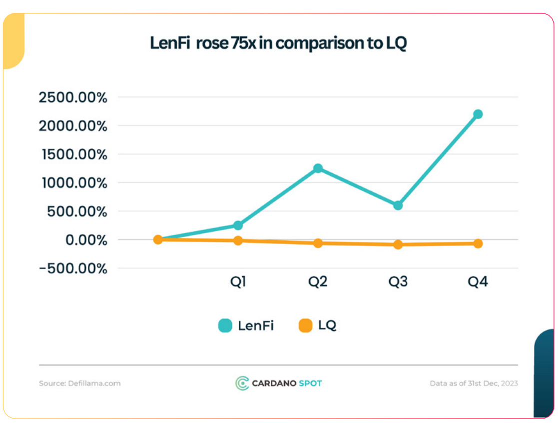
Lending protocols now form a major part of Cardano's TVL. They have increased from under 1% to approximately 18% by Q4 of 2023. Liqwid and LenFi drove the majority of these. The lending/borrowing TVL grew spectacularly from $0.3 million to $70 million.

Let's look into how each of these projects have done individually:

- **Liqwid**

Liqwid launched in February 2023 and quickly grew its TVL. The high emissions of its LQ token helped attract capital for the project. The project underwent major changes during the second part of the year, which has helped it expand its offering to include a wide range of assets.

Liqwid's aggressive growth strategy has put immense sell pressure on its token. LenFi grew over 75 times in value in comparison to the LQ token.

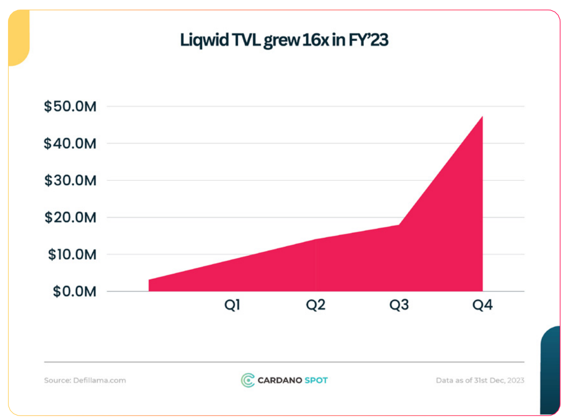


Liqwid has become one of the biggest lending protocols on Cardano and provides a simple way for users to earn yield.

The protocol has struggled with tokenomics and has tried to change it for the project's long-term health. LQ's inflation is capped at 3% per month after various governance updates.

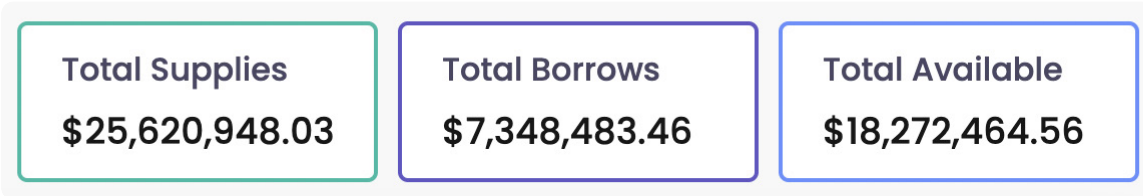
Liqwid consistently provided the highest interest in stables, ranging from 30% to 50% annually. This has attracted users to earn a yield on stablecoins during the bear market.

Liqwid TVL grew 16x in 2023. Most of this TVL was in the form of ADA and stablecoins like Djed & IUSD. ADA had a very low APY, but it was collateral to borrow stables for yield farming strategies.



However, TVL only gives us one side of the equation. The other side is borrow rates, which show the volume of active loans on the platform. The borrow rates have been quite low throughout the year, ranging between 20-30%. This aligns with other pooled lending protocols like Aave and Compound during that period. However, the utilization is much lower compared to LenFi or Levvy, where most loans are active.

Example borrow rate:



The major change during the year was the introduction of isolated markets and Liqwid V2. In the earlier version, the protocol was at risk from any of its collateral turning bad. This stops users from adding new collateral, which can be risky, so Liqwid could not onboard most Cardano native tokens outside stablecoins and ADA.

However, with V2, users could create isolated markets where risk is not socialized. This allowed them to onboard new collateral like Optim bonds, MIN, or WMT. They have also onboarded other stablecoin options like Wanchain bridged-USDC and bridged-USDT.

In other updates, the projects switched to a community-owned oracle, Charli3, to further decentralize the protocol. Additionally, liquidations were made open to the public, allowing anybody to liquidate at-risk positions. This increases capital efficiency.

Some popular strategies to earn from Liqwid:

- **Simple Deposit:** Deposit any asset to Liqwid. Low Risk.
- **Stable Looping:** Deposit Djed to borrow IUSD, buy Djed with IUSD, repeat process. Medium Risk (works better when IUSD is close to its peg).
- **ADA looping:** Deposit ADA to borrow Djed, buy ADA with Djed, repeat. High Risk.

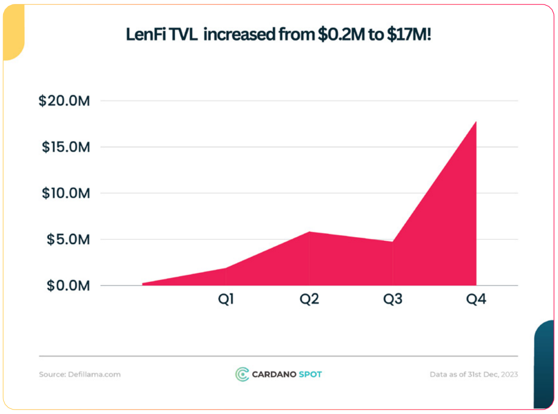
Liqwid's primary issue is that the current TVL is due to the interest in yield farming, and it might not be as sticky without token emissions. As the first mover, Liqwid has an edge over its competition. If it outgrows its token concerns while maintaining TVL, it has a potentially bright future in Cardano DeFi.

- **LenFi**

LenFi has been a money-maker play and gained a lot of goodwill from the community. Even LenFi v1's peer-to-peer bond product gained significant traction. A P2P bond requires a user to add collateral type, borrowable asset, loan period, and loan-to-value ratio. Users must be matched with others who are aligned with their preferences on those parameters. This makes P2P DeFi non-user friendly, and thus, it hasn't seen adoption across crypto. However, LenFi continued to grow even with its V1 product.

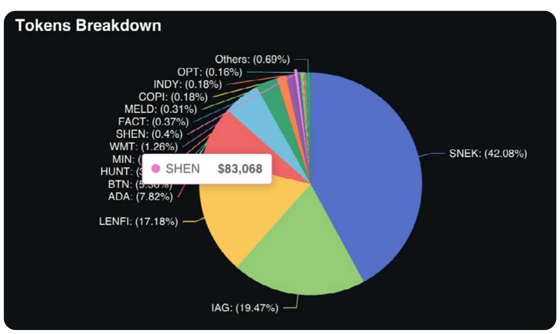
LenFi doesn't have any token emissions or reward mechanisms like Liqwid. This has resulted in it outperforming Liqwid by a huge margin. The TVL has grown exponentially from $0.2 million to $17 million. Except for Q3 of 2023, LenFi has grown >3x quarter-over-quarter.

Q3 was the first correction of the LENFI token. It was also around the time when Liqwid and Levvy started gaining traction. Both offer a much higher loan APY, which resulted in several asset markets moving to those protocols.



LenFi's P2P loan book allowed for a diverse set of assets to be added on both the collateral and borrow side. Initially, the protocol had grown concentration risk where the majority of the collateral was the LENFI token. The initial TVL growth could be explained by this, as the price of LENFI went up, so did the TVL which created a positive flywheel. This wasn't a huge risk to LenFi as all loans are P2P, however, it was a risk nevertheless.

Newer assets like Snek and Iagon have helped reduce this concentration risk. The protocol now has a diverse range of collateral.



ADA or stablecoins don't form a major part of the platform's assets. This has been the case since the launch of Liqwid when ADA left the protocol in droves. LenFi offers no farming rewards, so it lags in these assets. On the other hand, Levvy has acquired users who churn high volumes. However, LenFi has grown despite all the challenges.

The LenFi team primarily focused on its V2 version. LenFi V2 offers P2P + Pooled Lending. It's a form of isolated Pooled Lending in which users can create their pools and manage them with Pool Manager NFTs. A new user can choose from any of the available pools.

This simplifies the UX and automates the parameters for new users. It provides users with instant liquidity compared to waiting for their loans to be filled. This also makes TVL sticky, so users don't always have to renew their loans.

LenFi V2 is an innovative peer-to-pool model. A lender can choose a basket of tokens to be a part of their pool and further set the risk parameters. This offers users more flexibility and control over the lending/borrowing parameters. It has enhanced security compared to Pooled Lending, as it doesn't have a single point of failure.

LenFi V2 is expected to improve user experience. However, it will still be a bit complex for an ordinary user.

- **Levvy**

Levvy for NFTs was launched towards the end of Q2 of 2023. It's one of the leading NFT lending protocols on Cardano. They launched Levvy for tokens in October 2023.

Levvy is developed by **The Ape Society**, the largest NFT ecosystem on Cardano. It received major traction in 2023. It's a P2P NFT lending platform with no liquidation. The protocol has a fixed interest rate and duration, enabling an order book/pool for each collection. This simplifies the user experience and allows high liquidity in a P2P environment.

Cardano's EUTXO makes P2P more favorable than standard pool designs. With this model, you eliminate the need for centralized batchers oracles and allow for a high-velocity market. Levvy is borrower-centric or jpeg-owner-centric. You can take a loan with a high LTV on your NFT while not having the risk of liquidation.

TVL is usually the primary metric used to compare performance for most lending/borrowing protocols; it provides a proxy for usage. Levvy offers short-term loans—7 days or 14 days—which creates a high loan turnover. The TVL number wouldn't accurately represent product usage.

We could use three primary metrics - total outstanding loans, interest earned, and loans. Levvy has been #1 since its launch in issuing loans and earning user interest.

SOC is the utility and governance token behind Levvy. SOC stakers earn a portion of the fees earned on the platform, exclusive features, and governance rights in the future.

Unstable Stablecoins

Stablecoins are often called the 'Killer App' for crypto as they have real-world utility. They provide real utility by offering faster and cheaper settlements for global value transfer, which is attractive to retail and institutional users. We have seen payment giants like Mastercard, Visa, and PayPal foray into Web3 to capture this. The stablecoin market has grown from $10 billion to $13 billion in the last four years and is expected to increase rapidly in the coming years.

Stablecoins have major use cases: trading in DeFi, earning yield, and payments. All of these require a reliable stablecoin. Cardano is developing in this area. The current decentralized stablecoins don't offer scalability or reliability.

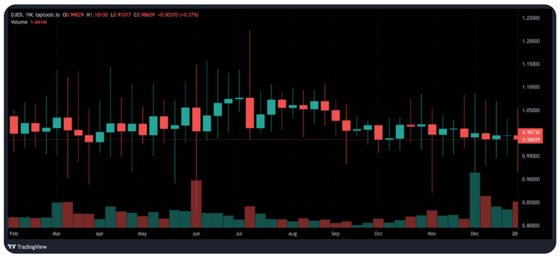
The two major stablecoins - IUSD and Djed, have a combined market cap of less than $20 million. This is just 5% of Cardano TVL. For comparison, Ethereum stablecoins are approximately 200% of their TVL. This shows us the low acceptance of stablecoins in Cardano.

We will keep this section shorter as we have reported for the past three quarters, and the situation did not meaningfully change in 2023.

Let's understand what we mean by this:

- **Stability**

This is how stable Djed was during 2023:



Djed is an over-collateralized stablecoin that requires 400-800% collateral to mint. If the system collateral falls beneath that level, Djed can't be minted. Djed wasn't available to be minted for several months during the year, resulting in frequent upside depegging.

IUSD by Indigo has consistently performed worse. It's a synthetic protocol where stables are backed by ADA collateral. However, there is no way to close loans and re-peg the stablecoin. This has resulted in the stablecoin being de-pegged for months.

IUSD's de-peg is caused by yield farming and leveraged ADA longs. As Djed was unavailable to be minted, some users borrowed IUSD to buy more ADA on leverage. This is why we see a worse performance from October 2023, when ADA started to perform well.

For example, two addresses added 10 million ADA each to vaults to mint IUSD. This IUSD was used to buy more ADA, which dropped the IUSD price to below $0.9 for the first time.

This can be fixed by adding interest on borrowing or by force-closing loans. Until it's fixed, IUSD won't be reliable for users.

It turns out that the stables were indeed not stable.

- **Scalability**

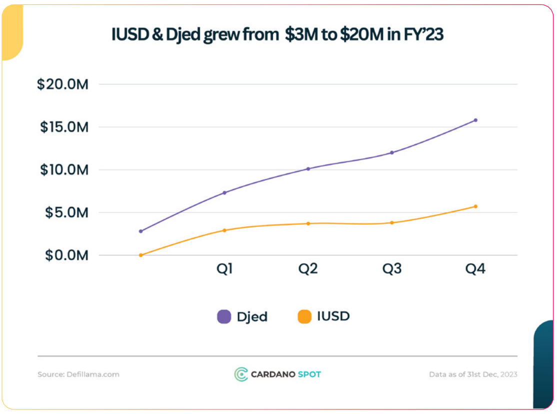
All financial instruments are about capital efficiency. The traditional banking system uses fractional banking, allowing it to use its capital 10x more productively. However, in crypto, we can't have undercollateralized fractional banking.

The best we can have is 100% fiat-backed stablecoins. Crypto stablecoins are less efficient as they have to be overcollateralized. The second factor is that using crypto collateral can lead to a risk of liquidation and losing assets during a downturn. This has severely limited the scalability of crypto stablecoins across all chains.

Ethereum stablecoins like MakerDao's DAI, Ethena's USDe, or Frax's FXS utilize off-chain components to scale to billions of dollars. Today, more stables accept fiat stablecoins and RWAs as collateral, putting them on a high-risk spectrum.

Djed already has suffered from this issue, where users weren't interested in providing collateral to allow more Djed to be minted.

Even with all the impediments, Cardano stablecoins have shown strong growth in 2023 with the market cap growing from $3 million to $20 million in 2023.



The scalability issue might intensify with time. However, the growth has been impressive nonetheless.

- **USDM**

USDT/USDC has proven that fiat stablecoins can grow to $100 billion while maintaining a strong peg. This makes them very attractive to users and institutions. Today, more than 90% of stablecoins are fiat-backed.

Fiat-stablecoins make a tradeoff on the stability, decentralization, and scalability stablecoin trilemma. They trade off decentralization for the other two. While centralization is a major risk, price instability is a no-go for any form of stablecoin use case.

USDM by Mehen is one of the first Cardano native fiat-backed stablecoins. It will have a few interesting features which set them apart from other fiat stablecoins:

– **Native Asset:** USDT/USDC can potentially be rendered useless or frozen by issuers. However, USDM will be a Cardano-native asset.

– **Open Mint/Redeem:** To maintain the peg's stability, stablecoins need to be minted/redeemed. Usually, professional market makers do this for a small fee. With USDM, anybody can register to offer this service. This enables the community to earn from any de-pegs and enables a tighter peg.

– **Proof of Reserves:** USDM's holding will be attested on-chain, and only new coins can be minted.

It's essential to note that fiat stablecoins have regulatory and banking concerns. The US government conducted Operation Chokepoint 2.0 in 2023, where banks were advised to close crypto bank accounts. There is also a risk of confiscation of funds by banks or the government. However, the US government is working on stablecoin regulation, and we should have better clarity from 2024 onwards.

In conclusion, fiat stablecoins could be a major unlock in value for Cardano. The regulatory environment can pose a major threat, and users need to consider this risk.

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