Insurance

Thematic Insights: March 2020

DELPHI DIGITAL

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Preface

As we revisit the core of the global financial system and better understand the nature of money, how it's distributed, and utilized, there's one piece underpinning the industry that's been a constant for over 250+ years: Insurance. Insurance is a product that never goes out of style. Why? There is always a strong demand for protection against loss.

The fast growth of cryptocurrencies has outpaced the infrastructure to support it. Protection, insurance, and hedging tools are crucial parts of any financial system, and it's apparent that the parallel financial system being built will also need it. Insurance-like solutions are a foundational pillar needed for the continued growth and maturation of DeFi.

Although major events like the $50m+ DAO hack and $30m+ Multi-Sig Parity hack are in the rearview mirror, there are inevitable speedbumps ahead. In order for segments like DeFi to expand beyond the niche community of enthusiasts, as the value locked in DeFi grows well beyond $1 billion and the attack vectors become more enticing, viable insurance-like solutions must grow in lockstep to allow participants to hedge all types of different risk.

From the adoption lens, there's an immediate need for insurance solutions with a more narrow focus to solve problems inside of the ecosystem first. Dapps are becoming more intertwined through composability, creating additional risks in the product stack ranging from financial, smart contract, and more. On top of this, the lack of risk mitigation tools is another barrier to entry for the next wave of market participants. In this paper, we'll explore how different insurance-like offerings by Nexus Mutual, Opyn, and others could fit into the bigger picture. We hope you enjoy the report, and feel free to reach out with any questions.

Value Proposition

For decentralized applications to gain widespread adoption, they need to provide value for their end users by offering an improvement over existing solutions. While options and mutuals are not directly insurance, they give users protection which help them act as insurance-like products. Below, we have highlighted the use cases for these products and the benefits they can offer relative to existing methods.

Use Cases

The main intention of insurance is simply to make a group of people more resilient to risk. The crypto market has a lot of risks that the traditional insurance industry won't provide cover for yet. Insurance is fundamental financial infrastructure that all economies need, so these protocols are essential for the space to continue to grow.

- **Protection:** A majority of the space is currently uninsured in the event of a smart contract hack or exploit. Decentralized Insurance platforms are a necessary piece for the broader ecosystem.

- **Hedging :** Users are able to hedge risk with protective put options.

- **Speculation:** In addition to being capital efficient hedging instruments, these products can be used for speculation.

Key Benefits

At it's core, insurance is just about financially coordinating a group of people. A smart contract can accomplish this pretty well as we'll see throughout this report.

- **Lack of Expensive Middlemen:** These blockchain-based products utilize smart contracts to uphold insurance payouts, rather than offices full of well re-numerated workers.

- **Faster Payouts:** Claims get paid out much faster (days) than with the traditional insurance world, where it sometimes takes months.

- **Greater Flexibility:** Eventually, this sector will allow investors to adopt more tailored investment strategies using exotic options and other insurance protocols to hedge different types of risk.

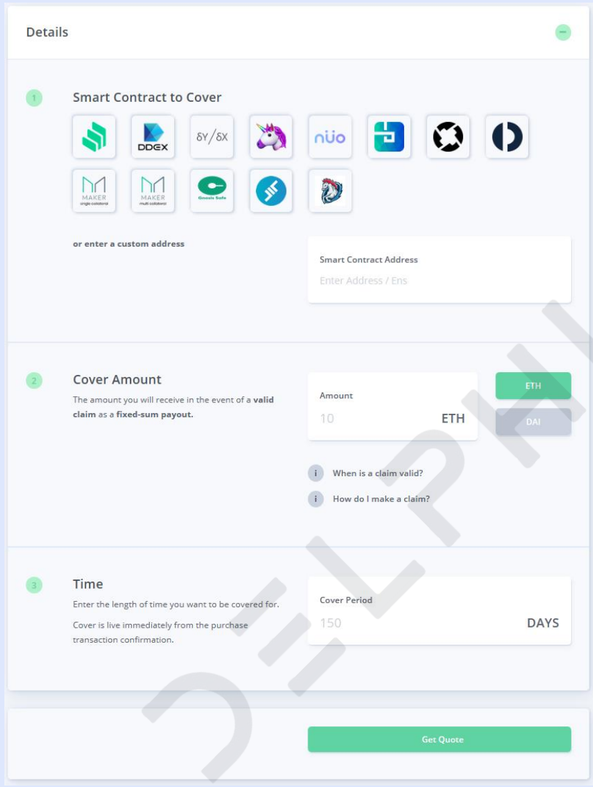
Nexus Mutual Overview

Launched in May 2019, **Nexus Mutual is a decentralized insurance protocol built on Ethereum.** Their first product allows users to take out covers on smart contracts using their native token, NXM.

Set up as a company limited by guarantee in the UK, Nexus Mutual operates under a **discretionary mutual structure**. What this means is that **all insurance claims are paid at the discretion of Nexus Mutual members choosing to serve as claims assessors by staking NXM.** They're starting with smart contract coverage, because by looking at on chain transactions you can see exactly what happened—so they view it to act as a verifiable data source.

Nexus Mutual features a native token (NXM) for governance, claims and risk assessment. Given the NXM tokens operate on a bonding curve where the curve sets the price, NXM tokens essentially represent a claim to the mutual's capital pool. This creates two main drivers in the underlying price movement: (1) members purchasing NXM, (2) members purchasing covers. Over the next few pages, we'll dive into the token mechanics as well as the traction Nexus has received.

How To Purchase Cover on Nexus Mutual



(Step 1) *Identify which contract you want to cover.*

(Step 2) *Enter the amount you'd like to be covered for (will be in either ETH or DAI).*

(Step 3) *Enter the length of coverage.*

[After factoring in the value locked over time, the age of the contract since deployment, the complexity of the contract source code, and the # of contract interactions over time, Nexus will generate a quote]

(Step 4) *If happy with the quote, submit the required ETH into the capital pool, and receive NXM tokens in return. 90% of the NXM received will be burned immediately. The remaining 10% held by the user will be used during the claims assessment process.*

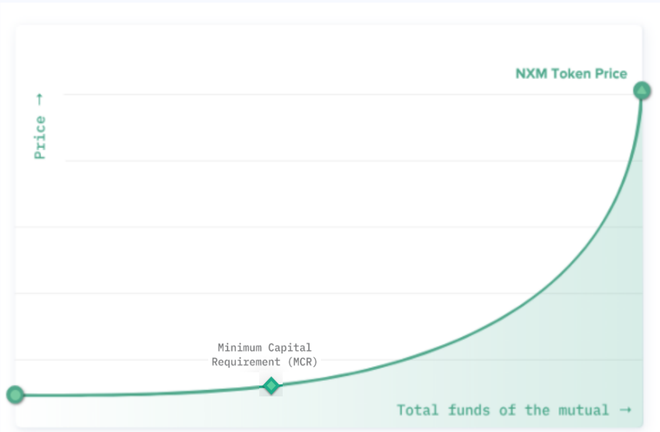
How To Assess Claims on Nexus Mutual

When Nexus Mutual is alerted to a claim, members will be asked to vote on whether to pay out on that claim or not. To vote, NXM holders must stake their tokens (with claims being resolved within 12-48 hours). The amount of NXM staked has to be at least 5x the value of the cover amount to either approve or deny a claim.

Once quorum is achieved and a decision is made, the reward for NXM holders that participated and voted with the supermajority is a percentage of the cost of cover (in NXM). NXM holders who voted with the minority will instead have their tokens locked for some period of time. To prevent rapid submission and approval of fraudulent claims, member tokens contributing to claims assessment voting become inactive for 12 hours proceeding a vote.

Nexus Mutual Token Mechanics

The Nexus Mutual token, NXM, represents both membership and a pro-rata claim to the mutual's capital pool. In order to purchase NXM, a user must successfully complete a KYC process, which is currently managed by a third party. NXM tokens can only be transferred and exchanged between existing members that have passed KYC.

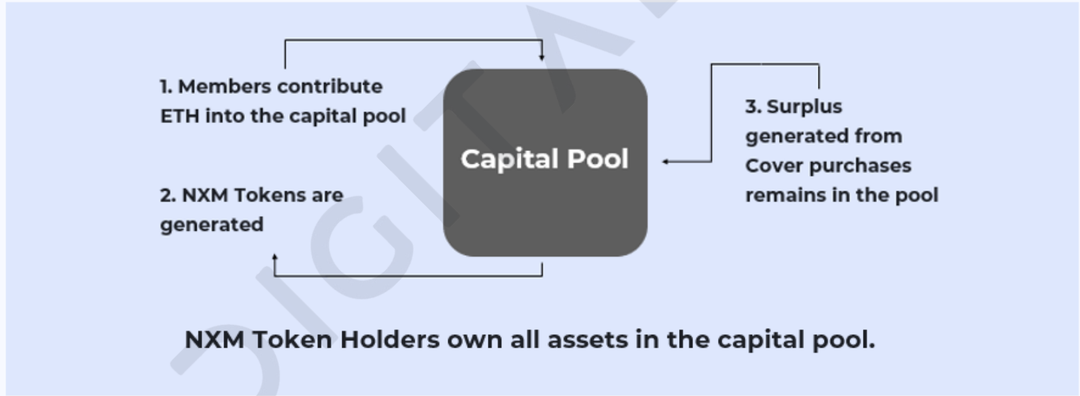


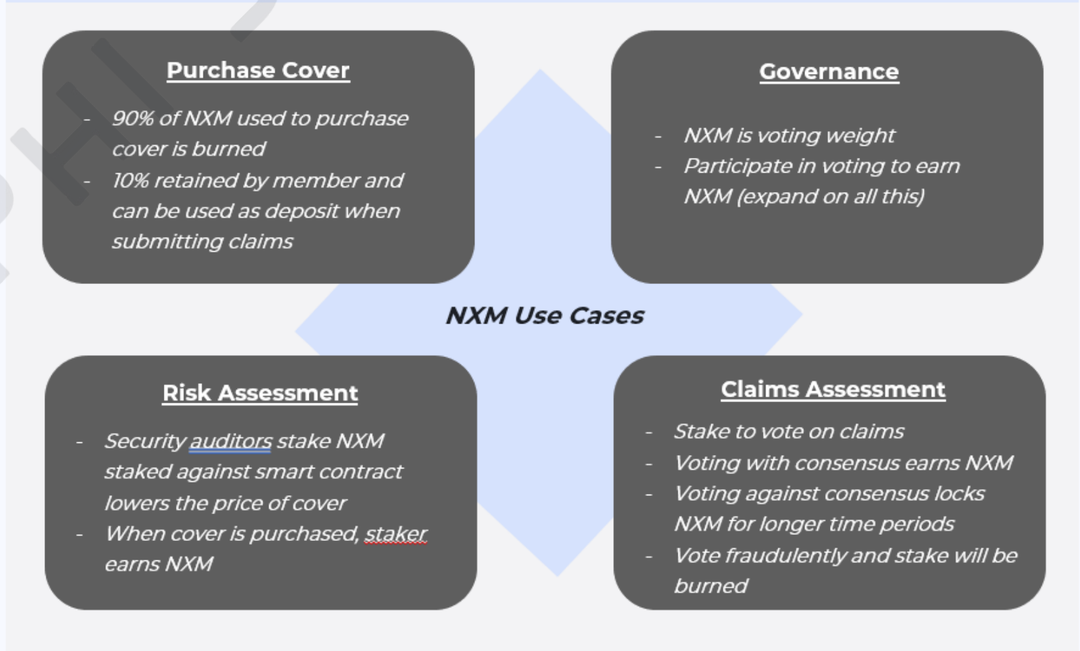
As we mentioned on the previous page, Nexus leverages a bonding curve to determine the price of the token. Essentially, the token price is driven by two main factors:

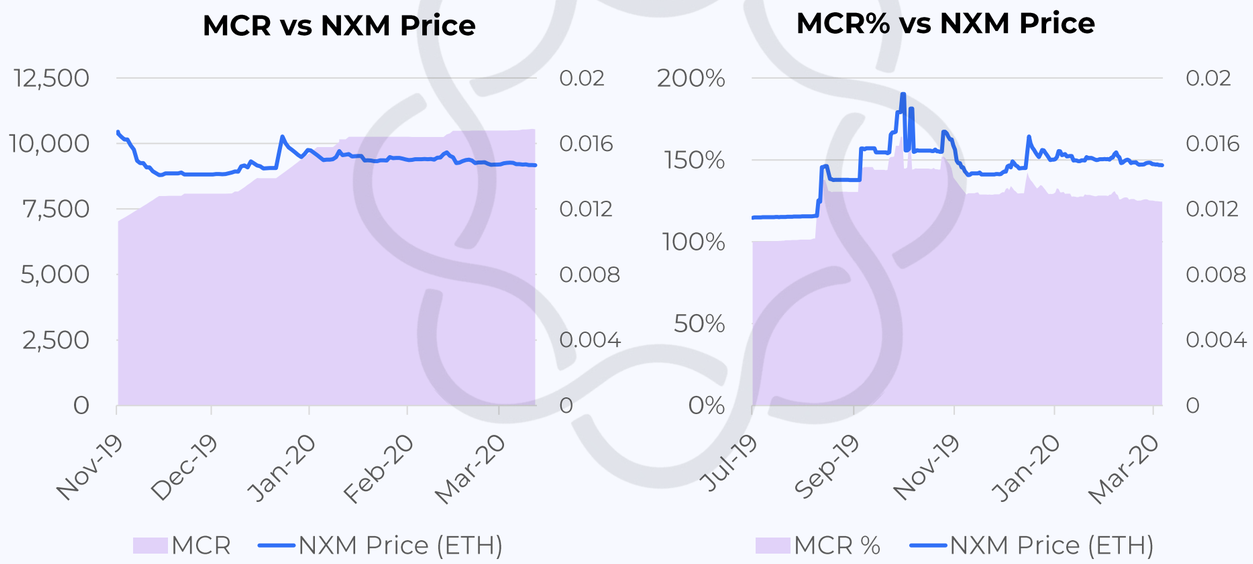
(1) The amount of capital required to support the covers written (MCR)

(2) The funding level of the mutual with respect to the minimum capital ratio (MCR%)

On the bottom right of this page, you can find more context regarding these two factors. As you can see below, NXM's price in ETH has followed the MCR % closely in the short term while our team believes MCR will be the factor to pay attention to for long term growth. On the next slide, we'll dive into the traction Nexus has seen so far.







MCR: The Minimum Capital Ratio (MCR) is the level of funds required to pay all claims with 99.5% confidence. At launch, this was set at 7,000 ETH and has gradually increased as more covers were purchased. This is a key value for the mutual as it influences how much cover can be written on any particular smart contract, and is also the level at which redemptions are restricted.

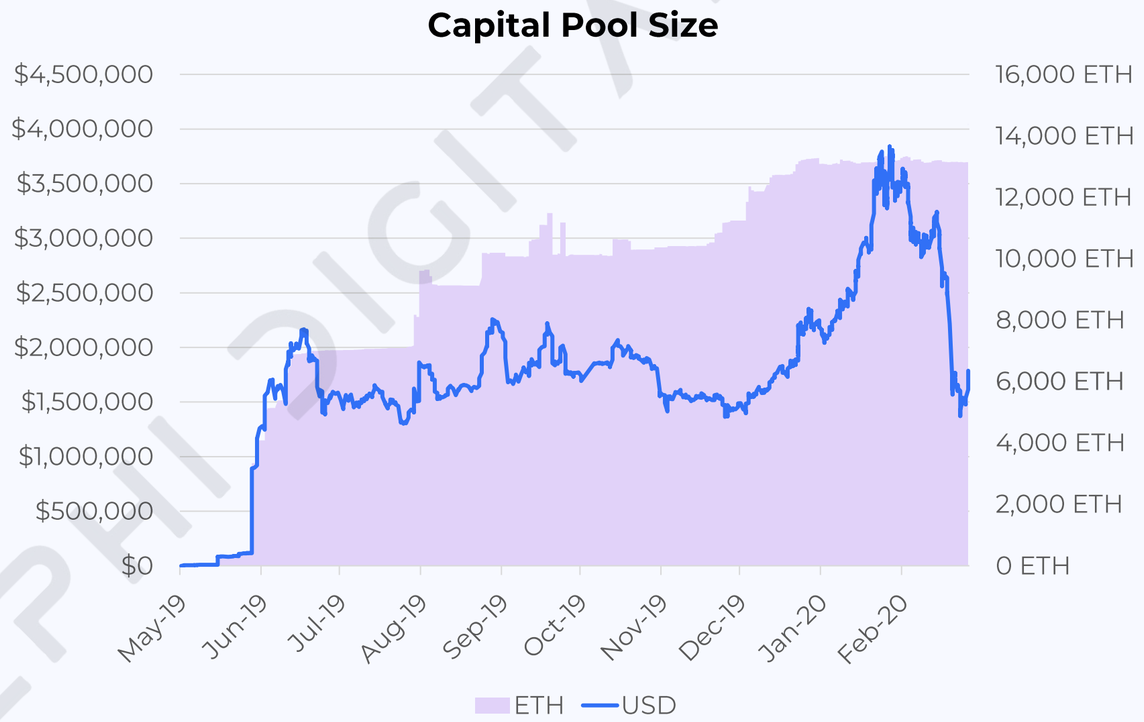
MCR%: This is essentially the excess capital ratio of the mutual (total amount of funds in the capital pool relative to the MCR). At minimum, MCR% must be above 100% in order for investors to withdraw their funds. The MCR is the greater of two values: (1) fixed value, which increases up 1% per day if MCR% is >130% and (2) a capital model formula linked to the amount of cover written. In December, their team upgraded the system as represented in (1) to allow for additional smart contract cover purchasing capacity.

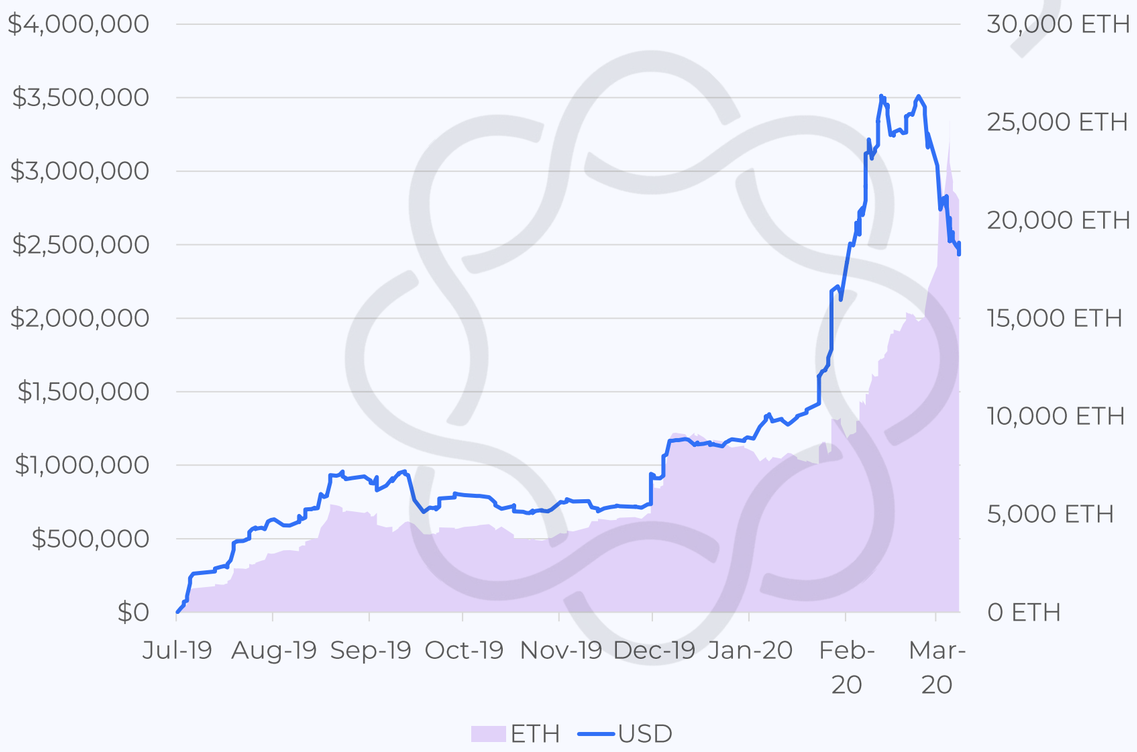
Sources: Nexus Mutual, Nexus Tracker

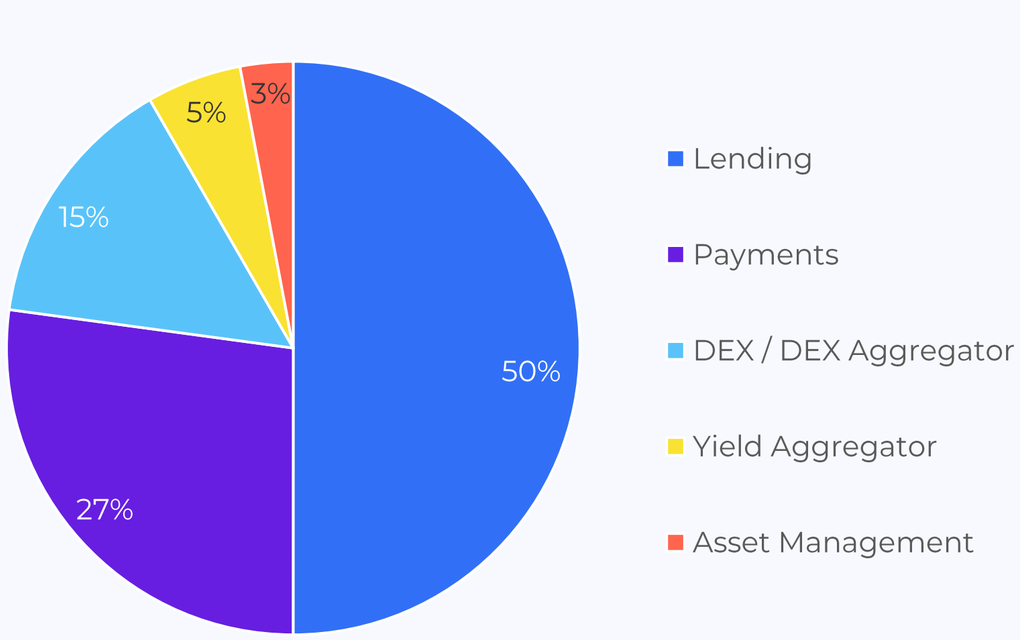
Nexus Mutual: Adoption

Key Takeaways

- Over 50% of cover is for Lending protocols (ex. Compound, DyDx). Top 5 segments make up 98% of covers.
- Since the bZx exploitation on Feb 14th, over $1,375,000 worth of smart contract insurance cover has been taken out as of March 18th. This catalyst triggered more members to join the mutual with NXM token address growth up 43% up since then and 176% YTD.
- **Cost Effectiveness:** Premium Costs make up ~0.7% of the value of active covers. The more NXM that is staked on a contract, generally the cheaper the premiums are.
- **Staking:** Currently, 23% ($1.5m worth) of total NXM has been staked. Total stake rewards are low at $2.7k







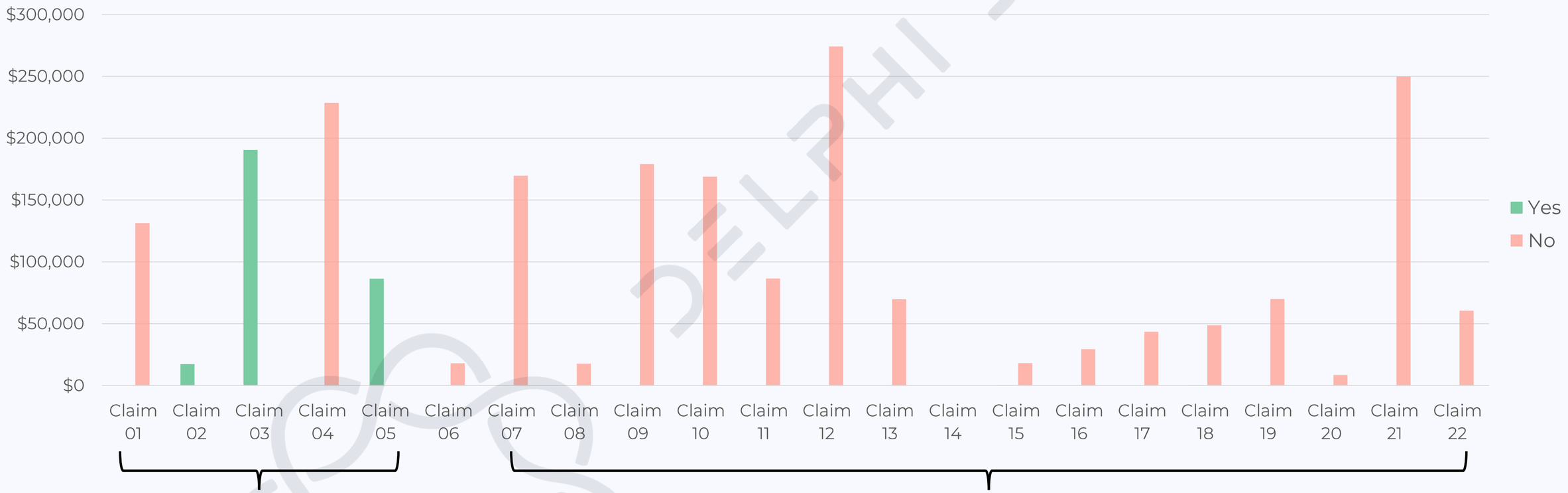
Sources: Nexus Mutual, Nexus Tracker

Nexus Mutual: Claims History

The long term success of the mutual relies on its ability to build trust in appropriately assessing and paying out claims. Below, our team has provided context for all the claims submitted to Nexus Mutual so far. As you'll see, a majority of these were submitted on just two contracts: bZx and MakerDAO.

- As of March 19th, there have been 22 claims submitted to the mutual. Of these claims, 3 have passed (paying out ~$34K) while 19 have been denied (at the time of writing, claim 21 says still pending but voting has already closed).
- Claim 6 was submitted on InstaDApp and was declined due to no known attack on the smart contract at the time of claim.

Voting History for Claims (USD Staked for Yes or No)



Claims Submitted from 2/15/20 – 2/19/20

Nexus Mutual's first claim ever was related to the bZx attacks we covered in our recent Thematic Insights report. The first claim, submitted early during the chaos of the exploit, was denied since people believed this was due to oracle manipulation. Eventually, Claims 2,3, & 5 passed once bZx's team published a post-mortem report admitting to a bug within their smart contract.Meanwhile, Claim 4 was denied because it was purchased after 1st bZx attack. 2nd attack not covered because it was oracle manipulation.

Claims Submitted from 3/13/20 – 3/15/20

Not surprisingly, Claims 7-22 for Nexus Mutual all were related to the MakerDAO situation (which will be sending a in-depth QuickTake on shortly). These claims were denied as mutual members agreed that MakerDAO's smart contracts operated as intended. As you'll read within our QuickTake, high gas prices meant auctions didn't complete as expected as the bots didn't adjust their gas prices. The failure was with keepers who failed to bid efficiently in collateral auctions. Since Keepers are external actors of MakerDAO, this did not qualify as a smart contract failure in respect to Nexus Mutual's policy.

Sources: Nexus Mutual, Nexus Tracker

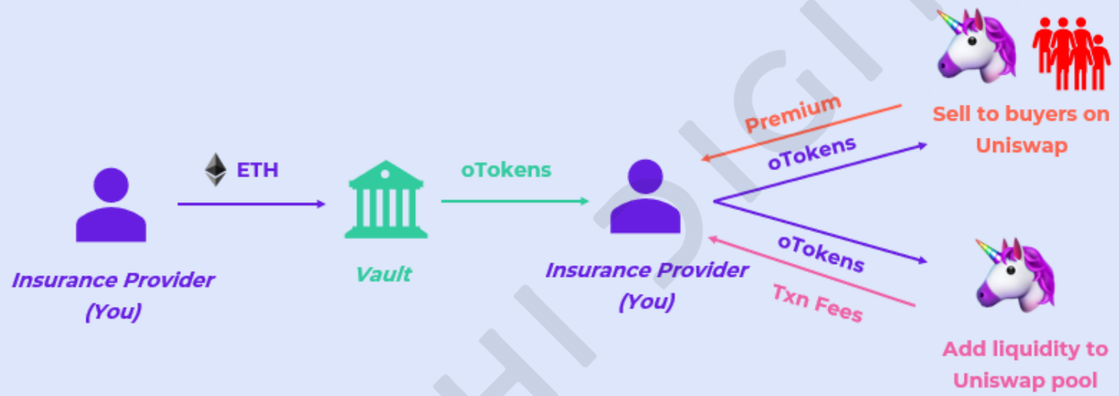
Opyn Overview

Opyn, which just launched a month ago, aims to be the non-custodial insurance layer for Decentralized Finance. It leverages Convexity, a generalized options protocol built on Ethereum. The protocol provides an easy interface for users to create put and call options. It allows market participants access to hedging, leverage, financial insurance, and the ability to deploy protective insurance. **Unlike Nexus Mutual, Opyn protects users in DeFi against, both, technical and financial risks.**

Opyn's first product offers a put option, essentially the right to sell a certain asset at a certain price before a certain date. Leveraging these options on stablecoin deposits, users can hedge against the risk of an event negatively impacting Compound's books. Additionally, Opyn currently provides deposit insurance for Compound (specifically DAI and USDC deposits).

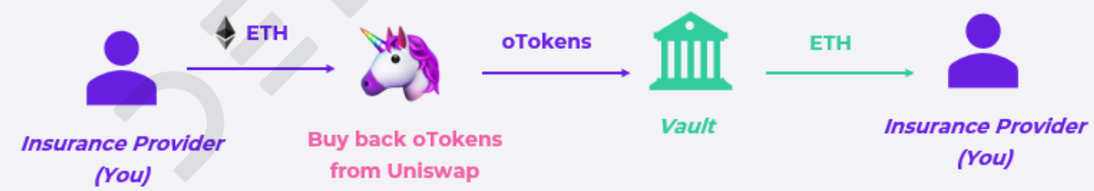
We'll be diving into oTokens and the adoption Opyn has seen since its recent launch shortly, but in the meantime we suggest you take some time to learn exactly how Opyn works via the graphics we've included to the right.

Earning premiums by providing insurance on Opyn



1. *Insurance providers lock up ETH in a vault (at least 1.4x collateralized) and mint oTokens*
2. *Insurance providers either sell oTokens and earn premiums or add oTokens to the Uniswap pool and earn transaction fees*

Closing your insurance providing position at any time on Opyn



1. *The insurance provider buys back the oTokens they sold from Uniswap*
2. *The insurance provider sends those oTokens to their vault and is able to redeem their ETH collateral in return*

Paying out insurance on Opyn

1. *In the case of an adverse event, insurance buyers can immediately make a claim by sending their oTokens and protected asset to the protocol.*
2. *Insurance providers pay out insurance buyers in ETH and receive these oTokens and protected asset.*

Sources: Opyn

Opyn: oTokens Explained

To better understand how Opyn works, we need to take a look at its two-sided marketplace designed using oTokens. On one side of the marketplace, ETH holders are able to earn a premium on their ETH by providing insurance. These positions are overcollateralized with the minimum collateralization ratio currently set at 140%. **This means for each $1 of insurance coverage, at least $1.40 has to be locked up.**

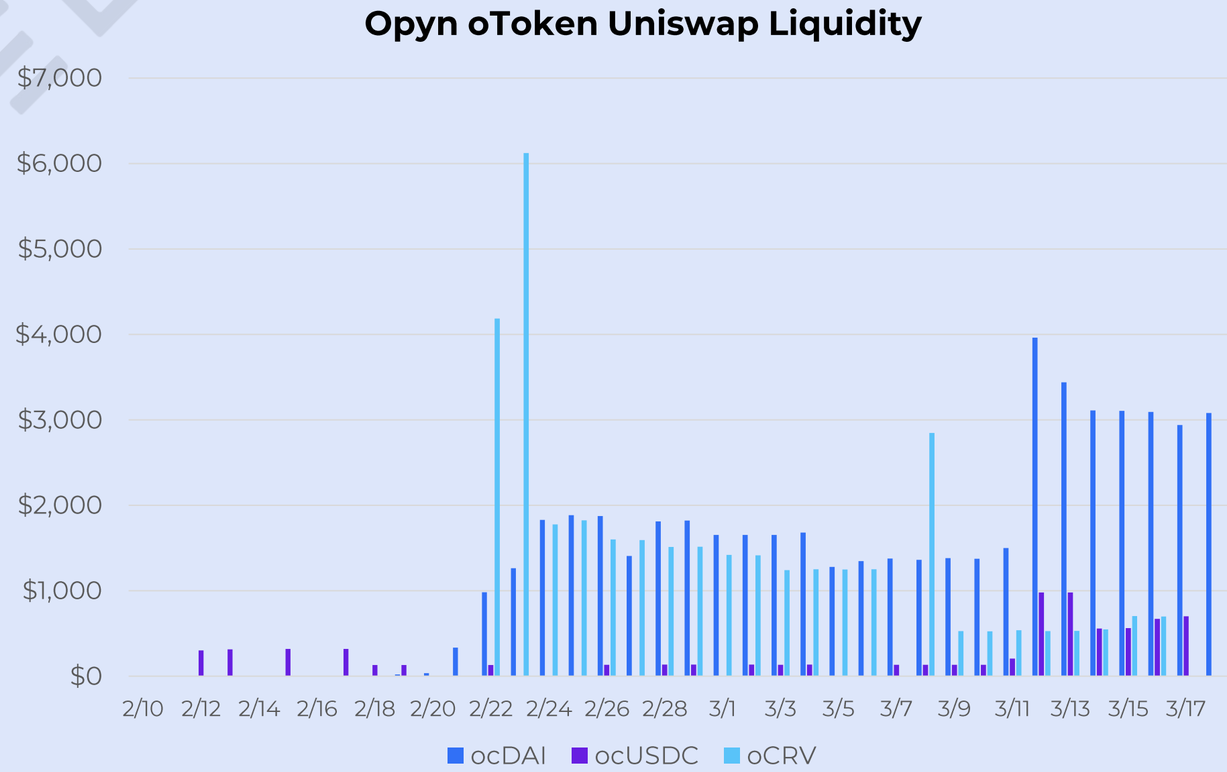
Once a user supplies ETH as collateral, she essentially mints oTokens (insurance tokens). As the graphics we included on the previous slide suggest, now the user has two options: (1) add oTokens to the Uniswap pool and earn transaction fees from other users' trading activity or (2) sell oTokens to insurance buyers on Uniswap and earn premiums. **At the moment, Uniswap is the only exchange to buy or sell oTokens so their price is heavily reliant on the amount of liquidity available.**

The graph we've included on the right shows Uniswap pool liquidity for each oToken over time. **As you can see, there is not much liquidity available across any of the three oToken pools right now**. As of March 18th, ocDAI has the most liquidity but is still just at $3,000. Meanwhile, the pools for ocUSDC and oCRV are both around $700. **Like we mentioned, Opyn launched just a month ago so we do expect an increase in liquidity for these tokens over the next few months.**

oTokens Currently Available

Name	Underlying Asset	Collateral Asset	Strike Price	Expiry
ocDAI	**cDAI**	ETH	$0.01859	2/10/2021
ocDAI (old)	**cDAI**	ETH	$0.02	2/10/2021
ocUSDC	**cUSDC**	ETH	$0.0208	2/10/2021
oCRV	**CRV**	ETH	$0.92	3/29/2020

There are two ocDAI contracts because the parameters of the ocDAI contract they initially launched with resulted in market prices for insurance of 10%+, which is too expensive to fulfill the needs of insurance buyers. The new ocDAI contract has adjusted parameters, which now has rates for insurance of around 2-4%.

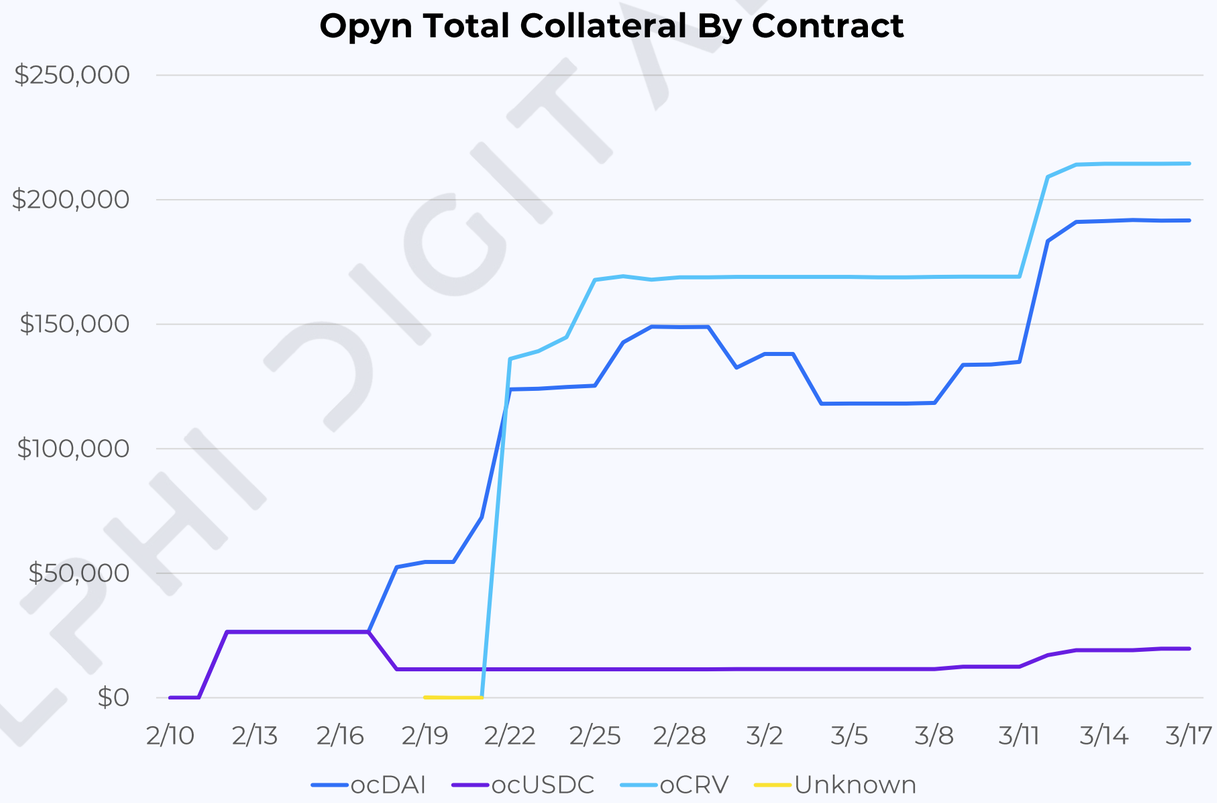


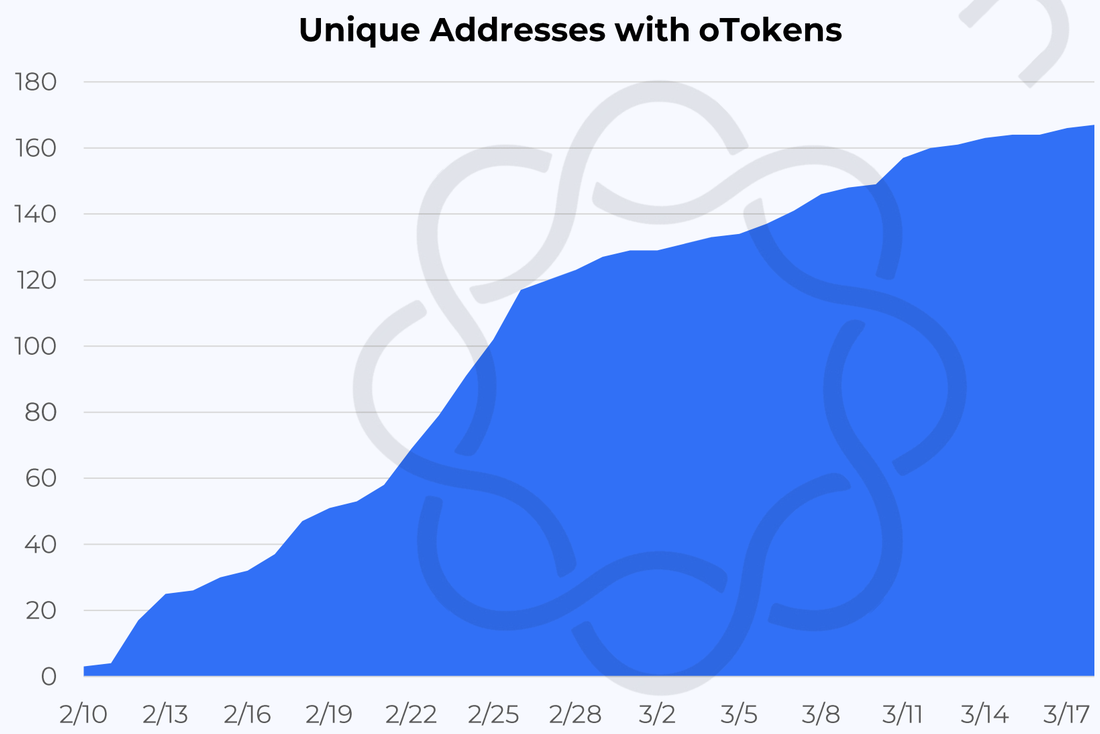
Sources:: Opyn, Opyn Dashboard by Tom Schmidt

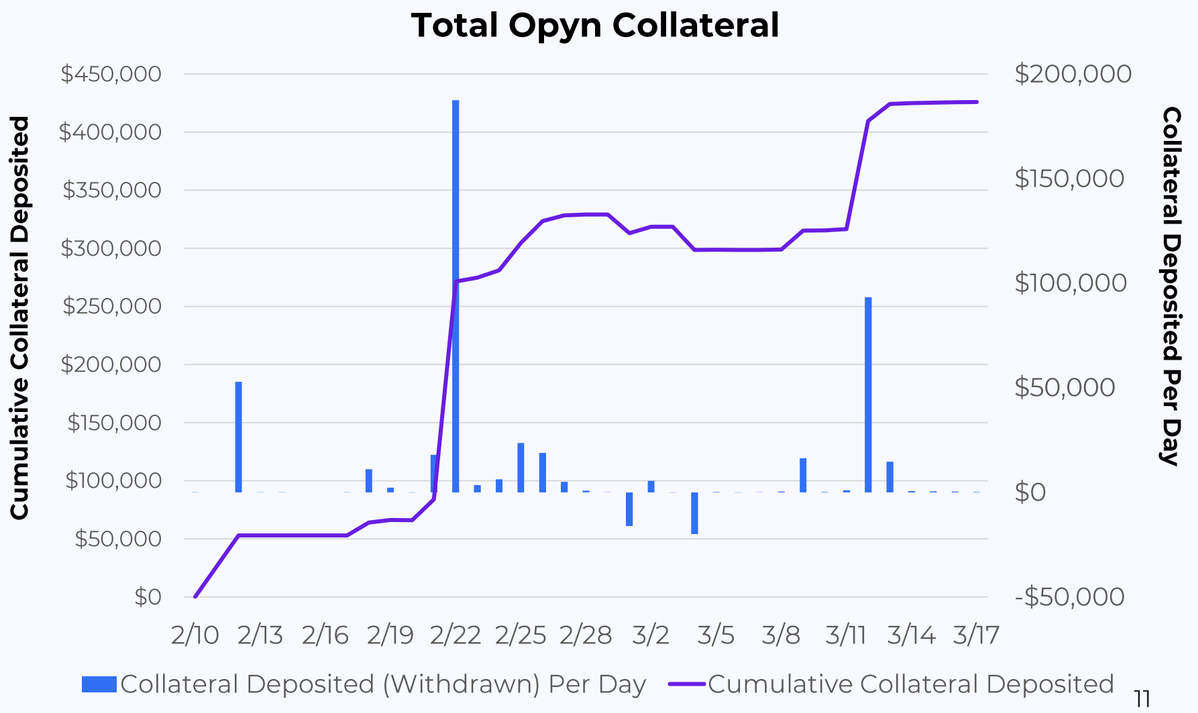
Opyn: Adoption

Key Takeaways

- Opyn's mainnet launched last month on February 12th. Unique addresses with oTokens has grown from 17 that day to 167 as of 3/18.
- At the moment, Opyn has 1851 ETH (~$425K) collateral backing $130K of insurance.
- oCRV and ocDAI have the most collateral deposited within their contracts, with ~$215K and ~$192K respectively.
- Early on, Opyn is seeing interest from teams to be liquidity providers for oTokens to protect their own user. The composability of Opyn will lead to implementations of new Opyn coverage with dapps.
- Opyn's team is currently beta-testing ETH put options, which should be launched in the near future.







Sources: Opyn, Opyn Dashboard by Tom Schmidt, Zubin Koticha

Nexus Mutual vs. Opyn Comparison

To summarize our team's deep dive into the two leading insurance protocols, we've included this comparison table for convenience.	Nexus Mutual	opyn
What does it ensure?	Smart Contract Technical Risk	Technical and Financial Risk
KYC?	Yes	No
Native Token	NXM	ERC20 Insurance Tokens (oTokens)
Yield Opportunity	Risk Assessment (Staking), Governance (Voting), Token Appreciation	Liquidity Provider, Earn Premiums By Providing Insurance
Capital and Liquidity		
Common Capital Pool	Yes	No
Fully Collateralized	No	Yes (Most of Time)
Liquidity	Customer to Pool	Two Sided Market
Flexibility		
New Products	Low	High
Composability	Low	High
Risk Coverage	High	Low
Oracles	Voting (Claims Assessment) and Price Feeds (ChainLink)	Compound's ETH:USD Oracle
Pricing		
Extreme Risk	Good	Not Great
At The Money	Not Great	Good

Other Alternatives

While we've mostly focused on Nexus Mutual and Opyn within this report, we wanted to highlight a few other projects experimenting with different solutions for users' insurance needs in the space. We'll be keeping an eye on these and look forward to diving into them eventually.

HEGIC

Hegic is an on-chain options trading protocol built on Ethereum. With it, you can deploy hedge contracts (which are similar to having drawdown insurance or holding a put contract). For example, miners can hedge to ensure money to cover mining farm expenses, or ETH holders and traders can leverage these contracts to hedge or speculate. The project is live on mainnet, but is unaudited. On the sellers (writers) side, Hegic liquidity pool contracts accumulate liquidity from many market participants simultaneously. This reduces downside risks while premiums are distributed between all LPs.

ETHERISC

Etherisc is a decentralized insurance protocol for collectively building insurance products. Its differentiating feature is that Etherisc uses parametric insurance. It replaces legal guarantees with the deterministic behavior of a smart contract. With it, users can get insurance products for flight delays, weather, crypto wallets, or even collateral protection for crypto backed loans. While the project is still in production, they've had some successful proof of concepts. They have a DIP token which is used for governance and in the future will be used for staking to ensure incentive alignment.

SmartPiggies

SmartPiggies are essentially decentralized derivatives for price insurance. They allow for two-party counterparty custom contracts, which allows for more flexibility when it comes to specific tenors, leverage, etc. Users receive an ERC-721 NFT and are able to define their own terms. Eventually, SmartPiggies aims to offer hedging against any asset, product, or service. While the project is still in production, they recently won Judge's Choice at an ETHDenver Hackathon. While they don't have a native token, their NFTs are collateralized with ERC-20 stablecoins and they use Chainlink oracles to fetch settlement prices.

saveDAI

saveDAI is essentially an insured high-yields savings account which is powered by Opyn, Compound, and MakerDAO. The project combines cDAI (Compound's version of Dai) and ocDAI (Opyn Insurance) tokens into a single ERC-20 token. With these two tokens bundled and wrapped together, saveDAI earns interest via Compound while also insuring against risks for Compound via Opyn. At the end of the day, saveDAI basically streamlines the process of purchasing both those tokens separately. The project began as a hackathon project at ETHDenver earlier this year, and will be launching soon.

UNSLASHED

UNSLASHED is an insurance protocol that is focused on the slashing risks for Proof of Stake protocols. Based on Melon Protocol, they are starting with Cosmos Hub and plan on expanding to Tendermint based blockchains and eventually other PoS chains. With it, users can buy or sell validators' risks and earn a yield for the protection they provide. Their team was a grantee of grant.fish (a validator operated by stake.fish that uses staking rewards as grants to newer projects) and is currently hard at work building out UNSLASHED.

Leader Commentary

Our team was able to reach out to a few key people building within this sector to get some insight into where they think it's headed.

Hugh Karp

Nexus Mutual Founder

"Along with lending and borrowing, insurance is fundamental financial infrastructure that any new economy needs and Ethereum is no different. Risk is ever-present in DeFi and users are willing to pay for cover so I expect an increasing number of experiments over the coming years. Different approaches, new products and likely some failures as well. Regulatory clarity and specialist expertise are probably the key items holding teams back. I'm while I'm not holding my breath on regulatory clarity I see more insurance specialists getting involved which bodes well for the future."

"DeFi enthusiasts and projects alike rely on Opyn's smart contracts and interface to protect themselves and their users for technical risks, like hacks, and financial risks, like crashes in the value of Ether. With recent DeFi hacks and liquidity crises, and DeFi growing in complexity, over the next 12-18 months insurance and risk management become more important than ever before to create a robust financial system that can serve all.

Aparna Krishnan

Opyn Co-Founder

Christoph Mussenbrock

Etherisc Co-Founder

"From our experience, the main challenge is distribution. We don't expect major adoption of crypto currencies in the next 12-18 month so all current blockchain based insurance solutions require embedding in existing payment and insurance solutions, except e.g a very small niche for on-chain insurance like Nexus Mutual. We will see a number of projects which will slowly gain momentum, but in general, we don't expect major breakthroughs in this time. We need more professionalism in the space. There are too many platforms and projects which are not mature but handle big amounts of value."

Disclosures

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